

Volume 7, Issue 8
SOLAR ECLIPSE NEWSLETTER

August 2002

SOLAR ECLIPSE NEWSLETTER

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The Solar Eclipse Mailing List

The Solar Eclipse Mailing List (SEML) is an electronic newsgroup dedicated to Solar Eclipses. Published by eclipse chaser Patrick Poitevin (patrick_poitevin@hotmail.com), it is a forum for discussing anything and everything about eclipses.

Thanks to the voluntary efforts of Jan Van Gestel of Geel, Belgium, the Solar Eclipse Mailing List (listserv) has been in operation since 10 December 1997. This is the first mailing list devoted solely to topic of solar eclipses on the internet.

You can send an e-mail message to the list server solareclipses@Aula.com, which will then forward your e-mail to all the subscribers on the list. Likewise, you'll receive email messages that other subscribers send to the listserv. Only subscribers can send messages.

The sole Newsletter dedicated to Solar Eclipses

Dear Friends,

Wow!!! This was a hell of a job. What a SENL issue. There was a lot of e-mail traffic on the SEML. The messages had some interesting topics. The SE World Atlas of Fred, the Eclipse Film Database, the naming of Minor Planets and other SE related events named to SE Colleagues, Galileo naked Sun observation, etc. etc. It was all good stuff and this issue made a nice archive of it.

Of course we had as well the big sunspot appearing on the Solar disc. Other interesting events in last month was the visit of Peter Tiedt (South Africa) in the UK. Unfortunately, the busy schedule and travelling of Jo and PP did not make it possible to meet. Maybe in SA?

Jo and PP also updated their Solar Eclipse WebPages (SEWP). All eclipse accounts,

illustrated with graphs and pictures has been added to the Pages. There are still some reports and pictures missing, but it will be updated soon.

Mexico 2002 is history at the moment and you will find some memories in this issue as well. The picture below has been taken by David Makepeace in the Hard Rock Café meeting on 9 June 2002. It is quite clear that PP prefers beer above having pictures taken. Jo watching here silly man ...

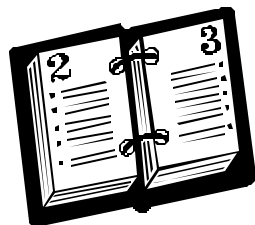
Enjoy this SENL issue and ... keep those solar eclipse messages coming....

Take care,

Patrick and Joanne



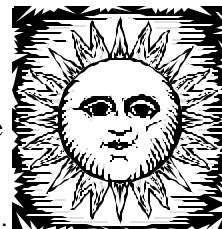
SECalendar



August 2002

Dear All, Please find herewith the solar eclipse calendar for August. If you have any additional information, queries or remarks, please drop me a mail.

For the whole Solar Eclipse Calendar, see <http://www.j.w.edmonds.btinternet.co.uk>



August 01, 1818 Birth of Maria O. Mitchell (1818-?), American astronomer. Observer of sunspots, discovered a comet in 1947 and was calculator at the American Nautical Almanac. (ref. DD 7/98)

August 02, 1133 "Duke Frederick . . . set fire to the town of Augsburg and killed many of its citizens . . . An eclipse of the Sun occurred on the 4th day before the Nones of August at midday for about an hour, such as is not seen in a thousand years. Eventually the whole sky was dark like night, and stars were seen over almost the whole sky. At length the Sun, emerging from the darkness, appeared like a star, afterwards in the form of a new Moon; finally it assumed its original form." Refers to a total solar eclipse in Augsburg of 2 August 1133. From: Honorii Augustodensis: Summa Totius et Imagine Mundi. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 392.

August 02, 1133 "In the year of the Incarnation of our Lord 1133 . . . on the 4th day before the Nones of August (Aug 2), the 4th day of the week (Wednesday) when the day was declining towards the ninth hour, the Sun in a single moment became as black as pitch, day was turned into night, very many stars were seen, objects on the ground appeared as they usually do at night." Refers to a total solar eclipse in Heilsbronn, Germany, of 2 August 1133. From: Notae Halesbrunnenses. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 392.

August 02, 1133 "In this year King Henry went over sea at Lammass, and the second day as he lay and slept on the ship the day darkened over all lands; and the Sun became as it were a three-night-old Moon, and the stars about it at mid-day. Men were greatly wonder-stricken and were affrighted, and said that a great thing should come thereafter. So it did, for the same year the king died on the following day after St Andrew's Mass-day, Dec 2 in Normandy." The Anglo Saxon Chronicle Refers to the total solar eclipse of 2 August 1133. (Quoted in UK Solar Eclipses from Year 1 by Williams.)

August 02, 1133 "That great eclipse of the Sun occurred on the 4th day before the Nones of August, the 27th day of the Moon, the 13th year of the Indiction. After midday, between the 7th and 8th hours, an eclipse of the Sun was seen in Leo . . . Very many stars were seen near the Sun; the hearts of many were transfixed, despairing of the light. The Sun, as if it did not exist was entirely concealed; for about half an hour it was like night. The face of the world was sad, terrible, black, wonderful." Refers to a total solar eclipse of 2 August 1133. From: Chronicon Magni Presbyterii. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 393.

August 02, 1133 "The elements manifested their sorrow at this great man's [King Henry 1] departure from England. For the Sun on that day at the 6th hour shrouded his glorious face, as the poets say, in hideous darkness, agitating the hearts of men by an eclipse; and on the 6th day of the week early in the morning there was so great an earthquake that the ground appeared absolutely to sink down; an horrid noise being first heard beneath the surface." Refers to the total solar eclipse of 2 August 1133. William of Malmesbury Historia Novella, Lib. i sec.8. Quoted in UK Solar Eclipses from Year 1 by Williams.

August 02, 1133 The last total solar eclipse at Jerusalem took place on 1133 August 2. The next total solar eclipses will be 2241 August 8, 2548 August 5, and 3275 July 15. There was also a total eclipse on 993 August 20, only 140 years before that of 1133. (ref. ENB013)

August 02, 1880 Greenwich time became civil time for England, Scotland and Wales. (ref. DD 7/98)

August 02, 2046 Two total solar eclipses at an interval of only 12 lunations (354 days) are possible, such as 12 August 2045 and 2 August 2046 in the Atlantic Ocean off the coast of Brazil. But together with the total solar eclipse of 30 April 2060, this is a trio occurring in a time span shorter than 20 year. This is the next trio. The last trio was over a part of Kazakhstan, east of the Aral Sea when the paths of the total eclipses of 21 September 1941, 9 July 1945 and 25 February 1952 passed. In the period 1401 - 30-

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0 there are 77 trios, each occurring in a time span shorter than 20 year. (Ref. JM 9/99)

August 03, -0430 (431 BC) "The same summer, at the beginning of the new lunar month (the only time by the way at which it appears possible), the Sun was eclipsed after noon. After it had assumed the form of a crescent, and some of the stars had come out, it returned to its natural shape." Refers to an annular solar eclipse of 3 August (29 July) 431 BC. Thucydides (Greek historian, c460-400 BC) History of the Peloponnesian War. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 346, and, in part, in Encyclopaedia Britannica CD 98. Ref FE 01/01.

August 03, -0430 (431 BC) Oldest European record of a verifiable solar eclipse (annular), by the Greek historian Thucydides.

August 03, 1872 Charles A. Young (US) observes a flare on the Sun with a spectroscope; he calls attention to its coincidence with a magnetic storm on Earth.

August 03, 1981 Minor planet (3115) Baily 1981 PL. Discovered 1981 August 3 by E. Bowell at Anderson Mesa. Named for Francis Baily (1774-1844), English astronomer and one of the founders of the Royal Astronomical Society. During his observation of the total solar eclipse of 1836 he noticed intrusions of sunlight around the Moon's limb, which have become known as Baily's beads. (M 10847) Name proposed by the discoverer following a suggestion by B. Hetherington. Baily is also honored by a lunar crater. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

August 03, 1998 First contact with SOHO (ESA) after more then one month silence. Ref. DD. 10/99.

August 05, 0761 Of the 14 summits 8000 meters, only Nanga Parbat witness totality on August 761. It happens again at the total solar eclipses of 10 July 967 and 24 August 2435. Ref PA 6/00

August 05, 1766 Cook 3061 (1982 UB1): Minor planet discovered October 21, 1982 by E. Bowell at Anderson Mesa. Named for James Cook (1728-1779), British circumnavigator and one of the first scientific navigators. He observed the Solar Eclipse of 1766 August 5 from Newfoundland and in 1769 measured the transit of Venus from Tahiti. MPC 10846. Named proposed by the discoverer. (ref. VK 6/97)

August 05, 1766 Eclipse observed southeast of Newfoundland: Eclipse Island (part of Burgeo Islands). Mentioned in the Chronology of Captains James Cooks (1728-1779) travels by Paul Capper. (ref. ENB 8)

August 06, 1618 Johannes Kepler determent the distance to the sun to be 22,5 milj km. (ref. DD 8/98)

August 06, 1766 Birth of William Hyde Wollaston (1766-1828), British Doctor and chemist. He saw in 1802 the Fraunhoferlines in the Solar spectrum but considered it as a limitation of colors. (Ref DD 8/99, Rc 1999)

August 06, 1963 Lost contact with OSO 1, American Orbiting Solar Observatory. Ref DD 10.99.

August 07, 1869 Charles Augustinus Young and William Harkness (US) independently discover a new bright (emission) line in the spectrum of the Sun's corona, never before observed on earth; they ascribe it to a new element and it is named coronium. In 1941, this green line is identified by Bength Edlén (Sweden) as iron that has lost 13 electrons.

August 07, 1869 In the US town Cincinnati, the last total solar eclipse was in 1395. The next total solar eclipse will be in 3046, an extremely long period without total solar eclipse. In this period, there are two near misses: 7 August 1869, a near total solar eclipse, magnitude 0.993; and 8 April 2024 an even more near-miss : magnitude 0.996. (ref. JM 7/99)

August 07, 1869 The Baily's beads were first photographed at the eclipse of August 7, 1869 by C. F. Hines and members of the Philadelphia Photographic Corps, observing from Ottumwa, Iowa.

August 07, 1981 Minor planet (3727) Maxhell 1981 PQ. Discovered 1981 August 7 by A. Mrkos at Klet. Named in memory of Maximilian Hell (1720-1792), famous for his determination of the solar parallax from his observations of the transit of Venus in 1769. Appointed director of the Imperial Observatory in Vienna in 1755, he prepared and published an important series of astronomical ephemerides. (M 26424) Name suggested by astronomers at the Astronomical Institute at Tatranská Lomnica. Dictionary

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August 07, 1985 Landing of STS-51F Challenger. 7 astronauts, Spacelab 2. Five telescopes on board study nearly continuous the sun and other stars. Ref. DD 10/99.

August 08, 2241 The last total solar eclipse at Jerusalem took place on 1133 August 2. The next total solar eclipses will be 2241 August 8, 2548 August 5, and 3275 July 15. And there will be one on 3381 May 16, only 106 years after that of 3275. (Ref. ENB013)

August 09, 0975 "The Sun was eclipsed Some people say that it was entirely total. During the hours mao and ch'en (some time between 5 and 9 h) it was all gone. It was the colour of ink and without light. All the birds flew about in confusion and the various stars were all visible. There was a general amnesty (on account of the eclipse)." From: Nihon Kiryaku. "At the hour ch'en (7-9 h), the Sun was eclipsed; it was completely total. All under heaven became entirely dark and the stars were all visible." From: Fuso Ryakki. "The Sun was eclipsed; it was all gone. It was like ink and without light. The stars were all visible (or: stars were visible in the daytime)." From: Hyaku Rensho. These three Japanese quotations refer to a total solar eclipse of 9 August AD 975. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, pages 267 and 268.

August 09, 1819 Birth of J. Lane, American physicist and astronomer. Studied the sun: solar physics, temperature and density. (ref. DD 8/98)

August 09, 1896 "If, during the progress of a total [solar] eclipse, the gradually diminishing crescent of the sun is watched, nothing remarkable is seen until very near the moment of its total disappearance. But, as the last ray of sunlight vanishes, a scene of unexampled beauty, grandeur, and impressiveness breaks upon the view. The globe of the moon, black as ink, is seen as if it were hanging in mid-air, surrounded by a crown of soft, silvery light, like that which the old painters used to depict around the heads of saints. Besides this "coronae, tongues of rose-coloured flame of the most fantastic forms shoot out from various points around the edge of the lunar disk. Of these two appearances, the corona was noticed at least as far back as the time of Kepler; indeed, it was not possible for a total eclipse to happen without the spectators seeing it. But it is only within a century that the attention of astronomers has been directed to the rose-coloured flames, although an observation of them was recorded in the Philosophical Transactions nearly two centuries ago. They are known by the several names of "flames," "prominences," and "protuberances."" Simon Newcomb Popular Astronomy 1890 See Exploratorium: Eclipse Expeditions, 1890. Albert Bergman, On Board the Pensacola - The Eclipse Expedition to the West Coast of Africa in A Man Before the Mast, 1890. See Exploratorium: Eclipse Expeditions, 1896. Corona and Coronet: Being a Narrative of the Amherst Eclipse Expedition to Japan, in Mr James's Schooner-Yacht Coronet, to Observe the Sun's Total Obscuration, 9th August, 1896. A particularly evocative account, by Mabel Loomis Todd. Published in 1898. Ref FE 01/01

August 09, 1911 Birth of William Alfred Fowler in Pittsburgh, Pennsylvania. Ref. The Bibliographical Dictionary of Scientists, edited by David Abbott, 1994.

August 09, 1953 Minor planet (1652) Hergé 1953 PA. Discovered 1953 August 9 by S. Arend at Uccle. Named in honor of Georges Remi, better known under his pseudonym Hergé, on the occasion of his seventy-fifth birthday. Considered by many as the father of the comic strip, he created his hero Tintin in 1929. (M 6831) Name proposed by J. Meeus. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg. The Tempel of the Sun describes a total solar eclipse. That eclipse refers to the TSE of 1944.

August 11, 1124 "In the month of August on the 11th day, before the evening service, the Sun began to diminish and perished completely. Great fright and darkness everywhere. And the stars appeared and the Moon (sic). And the Sun began to augment and became full again and everyone in the town was very glad." Refers to a total solar eclipse in Novgorod, Russia, of 11 August 1124. From: Novorodskaya I Letopic. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 391.

August 11, 1835 In 1835, Sir George Biddell Airy (1801-1892) began his 46 year reign as England's Astronomer Royal. Airy is known for his study on solar eclipses.

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August 11, 1999 Last total solar eclipse in Europe and Asia. About 500 million observers expected to be in the path of totality. After 1999, for Belgium it was since 17 June 1433 when there was a total solar eclipse.

August 11, 2001 First Totality Day. TD2001 was held in the Open University of Milton Keynes (England) as a continuation of De Duistere Dag (The dark day) which PP organized in Belgium. Speakers at TD2001 were Prof. Ken Phillips, Prof. Richard Stephenson, Dr. Francisco Diego, Ass. Prof. Jim Huddle (US), Dr. Francis Podmore (Zimbabwe), Dr. Edward Hanna, Dr. Barrie Jones, Sheridan Williams, Daniel Fischer (Germany), David Hardy, and Joanne Edmonds. Video's from Richard Bareford (US) and Wolfgang Strickling (Germany). The 75 attendees were from 7 different countries. The next TD will be on 8 February 2003.

August 12, 0603 Last total solar eclipse on Malta. There was a nearly total solar eclipse on 3 June 718, with a magnitude of 0.999. Maybe this eclipse was total when we use a different value of delta T. (Ref. JM 7/99)

August 12, 2026 Next total solar eclipses in Europe: August 12, 2026 total in North of Spain shortly before sunset. The year after, August 2, 2027 total in extreme South of Spain and September 12, 2053 total in extreme South of Spain, September 3, 2081 total in France, South in Germany, Switzerland, Austria, etc., September 23, 2090 total in northern France and the southwestern Belgium at sunset.

August 13, 1814 Birth of Anders Jonas Angstrom (1814-1874), Swedish astronomer and physicist, pioneer in the spectroscopy and spectra analysis. He found the relation between the fraunhoferlines in the solar spectra and the discontinuous spectra of hot gases. Showed some elements in the atmosphere of the sun. Published in 1868 the atlas of the solar spectra. His name is used for the angstrom 10-10m. (ref. DD 8/98, Rc 1999)

August 14 0733 "In this year Aethelbald captured Somerton; and the Sun was eclipsed, and all the Sun's disc was like a black shield; and Acca was driven from his bishopric." The Anglo Saxon Chronicle. Refers to the annular solar eclipse of 14 August AD 733. (Quoted in UK Solar Eclipses from Year 1 by Williams, and in The Sun in Eclipse by Maunder and Moore, who say it refers to an eclipse of AD716.)

August 14, 0733 "In the year 733 an eclipse of the Sun occurred on the 19th day before the Kalends of September (i.e. Aug 14), about the third hour of the day, with the result that almost the whole of the Sun's disc seemed to be covered by a black and horrid shield." Refers to an annular solar eclipse in northern England of 14 August AD 733. From: Bedae Continuato. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 422.

August 14, 0733 "One year after the Arabs had been driven back across the Pyrenees after the battle of Tours, the Sun was so much darkened on 19th [?] August as to excite universal terror." Refers to the annular eclipse of 14 August AD 733. From: The Chronik der Seuchen. Quoted in UK Solar Eclipses from Year 1 by Williams.

August 14, 1901 Minor Planet (475) Ocllo Discovered 1901 August 14 by D. Stewart at Arequipa. Named by the discoverer for the first Inca queen, by tradition daughter of the Sun. (AN 159, 129 (1902)) This is the first minor planet discovered in South America and also the first discovered in the southern hemisphere. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

August 15, -0309 (310 BC) "Agathocles, who was already at the point of being overtaken and surrounded, gained unhelped for safety as night closed in. On the next day there occurred such an eclipse of the Sun that utter darkness set in and the stars were seen everywhere; wherefore Agathocles' men, believing that the prodigy portended misfortune for them, fell into even greater anxiety about the future. After they had sailed for six days and the same number of nights, just as day was breaking, the fleet of the Carthaginians was unexpectedly seen far away." Refers to a solar eclipse of 15 August 310 BC. From: Diodorus Siculus (Greek historian, 1st century BC), Library of History. Agathocles was a tyrant who had made his escape, with a fleet of sixty ships, from a blockade at Syracuse harbour by the Carthaginians. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 348, and, in part, in Encyclopaedia Britannica CD 98. Ref FE 01/01.

August 16, 1920 Sir Joseph Norman Lockyer (1836-1920) died August 16th, 1920, at Salcombe Hill, Devon.

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August 16, 1984 Launch of AMPTE, three British satellites which study the solar wind and the interaction with the atmosphere. (ref. DD 8/98)

August 16, 1989 Minor Planet (4713) Steel 1989 QL. Discovered 1989 August 26 by R. H. McNaught at Siding Spring. Named in honor of Duncan Steel, Anglo-Australian astronomer who has conducted research on the origin and evolution of asteroids, comets and meteoroids. In particular, he has shown that several Apollo asteroids are the parents of meteor showers, indicating that these Apollos are likely to be extinct or moribund cometary nuclei. He has also worked extensively on radar observations of the meteoric influx to the atmosphere, planetary impact rates, and the dynamics of small solar system bodies. (M 17982) Dictionary of Minor Planet Names - ISBN 3540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg. Duncan Steel recently wrote a book about eclipses.

August 17, 1966 Launch of Pioneer 7, American solar satellite. Studied prominences and solar atmosphere. (ref. DD 8/98)

August 18, -0179 (180 BC) "Empress of Kao-tzu, 7th year, first month, day chi-ch'ou, the last day of the month. The Sun was eclipsed; it was total; it was 9 deg in (the lunar lodge) Ying-shih, which represents the interior of the Palace chambers. At that time the (Dowager) Empress of Kao-[tzu] was upset by it and said, 'This is on my account'. The next year it was fulfilled." Pan Ku Han-shu (AD 58-AD76). "On the day chi-ch'ou, the Sun was eclipsed, and it became dark in the daytime. The Empress Dowager was upset by it and her heart was ill at ease. Turning to those around her she said, 'This is on my account.'" Szu-ma Ch'ien Shih-chi Both of these quotations refer to a total solar eclipse of 4 March 181 BC. The Empress died on 18 August 180 BC. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 234.

August 18, 1868 During the eclipse of 18 August 1868 from the Red Sea through India to Malaysia and New Guinea, prominences are first studied with spectroscopes and shown to be composed primarily of hydrogen by James Francis Tennant (1829-1915), UK, John Herschel (1837-1921, UK - son of Sir John Frederick William Herschel 1792-1871, grandson of Sir William Herschel 1738-1822), Pierre Jules Cesar Janssen (1824-1907, France), George Rayet (France), and Norman Pogson (UK/India). All observers did see the spectra for a few moments. Pierre Jules Cesar Janssen (1824-1907) was so fascinated that he looked the next day when there was no eclipse. He saw the bright red line which he saw the day before. It was the first time that a prominence had been observed without an eclipse. A few days later, Sir Joseph Norman Lockyer (1836-1920) did the similar discovery. (ref. HD 1954, Rc 1999)

August 18, 1868 In his book Les Eclipses de Soleil, M.G. Bigourdan published a sketch of an eclipse of , made by Bullock in Manila and on which a comet like object, starting from the edge of the sun and moon. This sketch is also published in the book of Angelo Secchi (1818-1878), but no other numerous eclipse observer noticed the comet.

August 18, 1868 Pierre Jules Cesar Janssen (1824-1907, France) discovered helium in the spectrum of the Sun during a solar eclipse. (ref. Rc 1999)

August 19, 1646 Birth of John Flamsteed (1646-1719) who observed the 1715 solar eclipse from Greenwich. (Ref. Rc 1999)

August 19, 1887 Dmitri Ivanovich Mendeleeff (1834-1907), Russian. Uses a balloon to ascend above the cloud cover to an altitude of 11,500 feet (3.5 km) to observe an eclipse in Russia.

August 20, 1514 "At the hour of wu (i.e. between 11 and 13 h) the sun was eclipsed. The sky and Earth became dark in the daytime. All the birds flew about in alarm. The domestic animals went into the forest. At the hour of yu (17-19 h) the light came back." From: Fu-ning Chou-chih (local history of Fu-ning county). "At the hour of wu suddenly the Sun was eclipsed; it was total. Stars were seen and it was dark. Objects could not be discerned at arm's length. The domestic animals were alarmed and people were terrified. After one (double-) hour it became light." From: Chiang-hsi (Jiangsi) province. Both of these quotations refer to a total solar eclipse of 20 August 1514. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 261.

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August 21, 1560 Christoph Clavius (1537-1612) witnessed two spectacular Eclipses of the Sun in the space of 7 years. "One of these I observed about midday at Coimbra in Lusitania (Portugal) in the year 1559 (after calculations it was 1560), in which the Moon was placed between my sight and the Sun with the result that it covered the whole Sun for a considerable length of time." (ref. EJ 97)

August 21, 1560 In "Name in the Window" Margaret Demorest proposes that Shakespeare. sonnets, nos 1-109, incorporate a calendar for the years 1501-1609, each sonnet corresponding to a year. The 3 appearances of the word Eclipse have been investigated by Peter Nockolds. "Nativity once in the maine of light, Crawles to maturity, wherewith being crown'd, Crooked eclipses gainst his glory fight." An Eclipse was indeed Partial. (ref. ENB012)

August 21, 1977 Minor Planet (4010) Nikol'skij 1977 QJ2. Discovered 1977 August 21 by N. S. Chernykh at Nauchnyj. Named in memory of Gennadij Mikhajlovich Nikol'skij (1929-1982), Soviet astronomer, known for his research on the sun and the solar corona and as a codiscoverer of the solar wind. (M 19695) Obituaries published in Zemlya Vsennaya, No. 3, p. 33-34 (1983); Properties and interactions of interplanetary dust, p. XXIII-XXIV (1985). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

August 21, 2017 Next total solar eclipse in the USA. The southern part of Illinois will have 2 total solar eclipses in a time span of only 7 years. The next total solar eclipse after this one will be on 8 April 2024. (Ref. JM 9/99)

August 22, 1834 Birth of Samuel Pierpont Langley (1834-1906), American astronomer and physicist. Developed a bolometer and determined the value of the solar constant. (ref. DD 8/98, Rc 1999)

August 22, 1906 Minor Planet (754) Malabar Discovered 1906 August 22 by A. Kopff at Heidelberg. Named in remembrance of the Dutch-German solar eclipse expedition to Christmas Island in 1922. Malabar is a city and mountain on Java. (I. van Houten-Groeneveld; B. Hidayat) The naming is described in AN 218, 253 (1923): "Aus Anlass der holländisch-deutschen Sonnenfinsternis-Expedition nach Christmas Island wurde der Planet der Niederländisch-Indischen Sternkundigen-Vereinigung zur Benennung überlassen als Zeichen des Dankes für die der Expedition zuteil gewordene Förderung. Herr K. A. R. Bosscha auf Malabar (Java), der Vorsitzende der Vereinigung, erteilte ihm den Namen." Bosscha and his friend Kerkhoven determined that after their death a great part of their capital should be put into a fund to serve astronomy in the Netherlands and Indonesia. In 1954 the Kerkhoven-Bosscha-Fund was established in Leiden. In the course of the years this fund has grown and helps today the Dutch and Indonesian astronomy in many ways. Bosscha dedicated the name to the Malabar mountain, 40 km south of the city of Bandung, location of his beautifully cultivated tea plantations. Dictionary of Minor Planet Names - ISBN 3540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

August 25, 1997 Launch of Advanced Composition Explorer (US) for solar study and study of the composition of solar wind. (ref. DD 08/98)

August 26, 1865 Death of Johann Franz Encke (1791-1865), German astronomer. Studied the comet with the same name, discovered the gap in the A-ring of Saturn and determined an accurate value of the solar parallax. The Royal Society mentioned the death to be 26 or 28 August 1865. (ref. DD 8/98, Rc 1999)

August 26, 1962 Launch of Mariner 2 (US). Passed Venus and discovered solar wind. (ref. DD 8/98)

August 28, 0360 "It was almost total and was in Chueh. Whenever an eclipse covers a small portion of the Sun the calamity it brings will be relatively small, but when it covers a large portion of the Sun the consequences will be much more serious. Chueh forms the 'Celestial Entrance', and hence misfortune would fall upon the Head of State - the next year the Emperor died." Refers to a solar eclipse of 28 August AD 360. From: Chin-shu ('History of the Chin Dynasty', Chinese). Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, pages 232 and 241.

August 29, 1886 Bettina 250: Minor planet discovered 1885 September 3 by Johann Palisa at Vienna. Named for Bar-

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ness Bettina von Rothschild of the Austrian plutocratic family. In *Observer*, Vol 8 p 63 (1885) the following info was published: "Herr Palisa, being desirous to raise funds for his intended expedition to observe the Total Solar Eclipse of August 29, 1886 will sell the right naming the minor planet N°244 for 50 English Pounds"... (ref. VK 97)

August 30, 1844 Death of Francis Baily (1774-1844) in London, British amateur astronomer. Co-founder of the Royal Astronomical Society, of which he was president for years. Described the after him called Baily's beads. (ref. DD 8/98, Rc 1999). Born in Newbury Berkshire, 28 April 1774. Ref. *The Bibliographical Dictionary of Scientists*, edited by David Abbott, 1994.

August 30, 1905 In "Chasing Eclipses" by Rebecca R. Joslin (Walton Advertising and Printing, 1929).Spain. "Then as the moon moved slowly on, and off, the sun faintly pierced the cloud and lighted the earth and life returned. But we hardly had time to draw a breath, when suddenly we were enveloped by a palpable presence, inky black, and clammy cold, that held us paralyzed and breathless in its grasp, then shook us loose, and leaped off over the city and above the bay, and with ever and ever increasing swiftness and incredible speed swept over the Mediterranean and disappeared in the eastern horizon. Shivering from its icy embrace, the seized with a superstitious terror, we gasped, "What was That?" Had the terrible Horsemen of the Apocalypse been riding over the city, and had we stood in their pathway? Had the Angel of Death held us in his arms for a moment, and then, as our time had not yet come, thrown us off for a little longer stay on earth? The look of consternation on M's face lingered for an instant, and then suddenly changed to one of radiant joy, as the triumphant reply rang out, "That was the Shadow of the Moon!" Ref. SENL 02.02

August 30, 1981 Minor planet (3123) Dunham 1981 QF2. Discovered 1981 August 30 by E. Bowell at Anderson Mesa. Named in honor of David W. Dunham, American astronomer and organizer of the International Occultation Timing Association. Dunham has played a cardinal role in collecting and analyzing occultation observations, particularly those involving asteroids and grazing occultations by the Moon. In addition, he has stimulated many observers to make accurate and useful timings of occultation phenomena. (M 10847) Name proposed by the discoverer following suggestions by E. Goffin and P. L. Dombrowski. *Dictionary of Minor Planet Names* - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg. Dunham studies the diameter of the sun by his grazing (central) solar eclipses.

August 30, 1991 Launch of the Japanese solar mission Yohkoh (Solar-A). Study of prominences and other processes in roentgen and UV. (ref. DD 8/98)

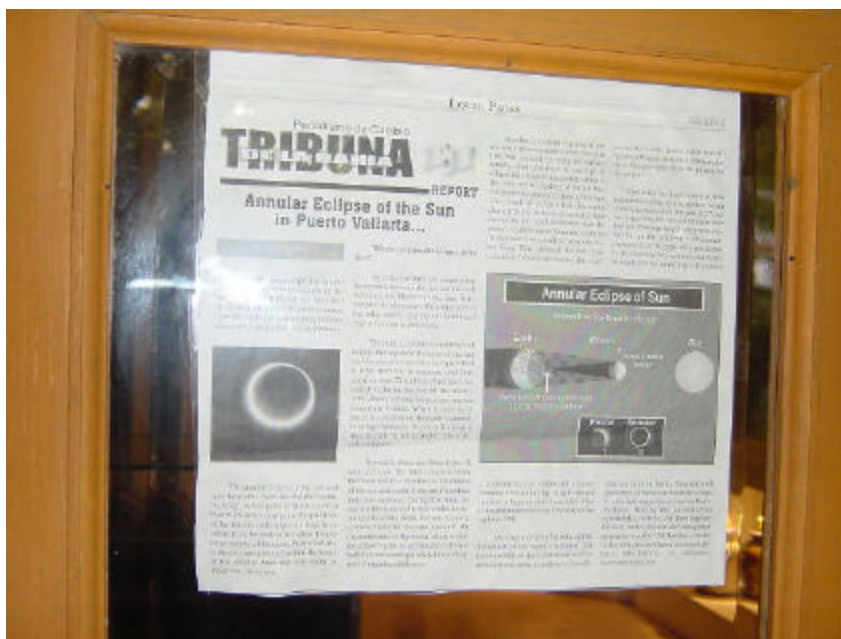
August 31, 1821 Birth of Hermann L. F. von Helmholtz, Du. physiologist, doctor and physicist. In 1834 he mentioned that the contraction of material the cause was of energy on the sun. He calculated that the sun could remain for 15 million years if it contracted 60 m per year. (Ref DD 08/99)

August 31, 1932 G.G. Cillie (UK) and Donald H. Menzel (US) uses eclipse spectra to show that the Sun's corona has a higher temperature (faster atomic motion) than the photosphere. Confirmed, with much higher temperature, by Roderick Oliver Redman (1905-1975) during an eclipse in South Africa on October 1, 1940. (ref Rc 1999)

August 31, 1979 Comet Howard-Koomur-Michiels collapsed on the sun. (ref. DD 8/98)

and ... keep those solar eclipse related messages coming ... Best regards, Patrick

Eclipse poster anno 2002



SECalendar

Contributions from Jan Pieter van de Giessen

Solar Eclipse 8 juli 400

57. Hieronymi presbyteri contra Joannem Hierosolymitanum ad Pammachium liber unus (Migne, Patr. L. v. XXIII 411) "Quis scindit ecclesiam? nos, quorum omnis domus Bethleem in ecclesia communicat? an tu qui aut bene credis, et superbe de fide taces: aut male, et vere scindis ecclesiam? nos scindimus ecclesiam, qui ante paucos menses circa dies Pentecostes cum obscurato sole, omnis mundus jamjamque venturum judicem formidaret, quadraginta diversae aetatis et sexus, presbyteris tuis obtulimus baptizandos?"

ANCIENT AND EARLY MEDIEVAL ECLIPSES IN EUROPEAN SOURCES The battle at Pollentino 58. Claudian de bello Pollentino sive Gothico, v. 233 (Mon. Germ. Auct. antiq. X 268) "Terridat assiduus Lunae labor atraque Phoebe noctibus aerisonas crebris ululata per urbes. nec credunt vetito fraudatam Sole sororem telluris subeunte globo, sed castra secutas barbara Thessalidas patriis lunae venenis incestare iubar. tunc anni signa prioris et si quod fortasse quies neglexerat omen, addit cura novis; lapidosos grandinis ictus molitasque examen apes passimque crematas perbachata domos nullis incendia causis et numquam caelo spectatum impune cometem."

ANCIENT AND EARLY MEDIEVAL ECLIPSES IN EUROPEAN SOURCES

J.P. van de Giessen (Last update 07/07/2002 12:36:27)

Solar Eclipse 20 August 1514

"At the hour of wu (i.e. between 11 and 13 h) the sun was eclipsed. The sky and Earth became dark in the daytime. All the birds flew about in alarm. The domestic animals went into the forest. At the hour of yu (17-19 h) the light came back." From: Fu-ning Chou-chih (local history of Fu-ning county). "At the hour of wu suddenly the Sun was eclipsed; it was total. Stars were seen and it was dark. Objects could not be discerned at arm's length. The domestic animals were alarmed and people were terrified. After one (double-) hour it became light." From: Chiang-hsi (Jiangsi) province. Both of these quotations refer to a total solar eclipse of 20 August 1514. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 261.

References: J.P. van de Giessen
(Last update 07/07/2002 12

Eclipse posters anno 2002

Total Solar Eclipse 02 October 1567

The careful description of the solar eclipse of A.D. 1567 by Clavius is used to derive limits to the Earth's rotational clock error (T) of between 145 and 165 sec at this date. This result provides an important link between the T curve as deduced from ancient and medieval eclipse observations and that obtained from telescopic data.

References: F.R. Stephenson, J.E. Jones and L.V. Morrison, Astron. Astrophys. 322, 347-351 (1997), The solar eclipse observed by Clavius in A.D. 1567



SECalendar

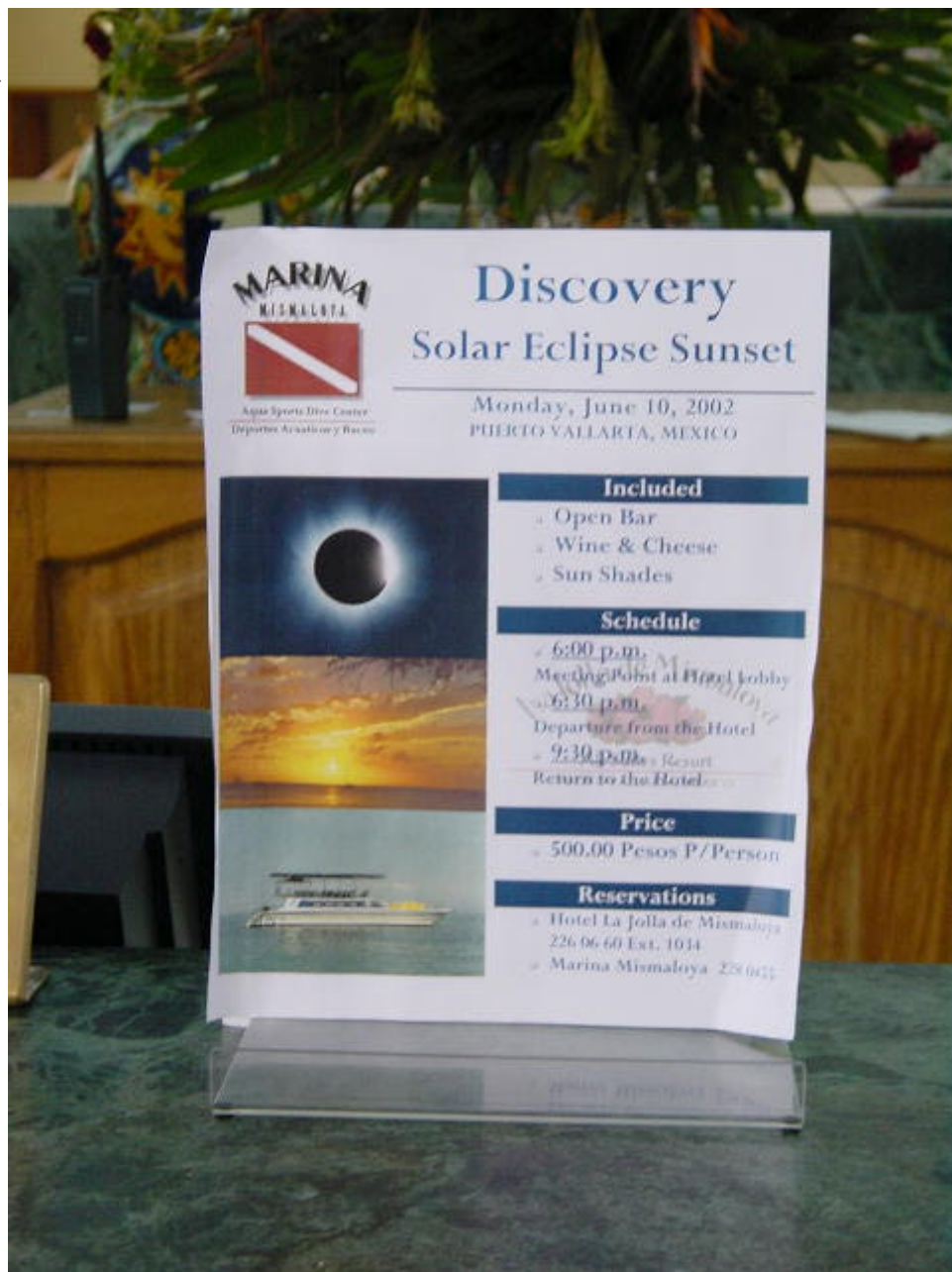
Comment SECalendar from Julien Onderbeke

To: SOLARECLIPSES@AULA.COM Date: Fri, 02 Aug 2002 20:03:07 From : Julien Onderbeke

Dear Patrick,

1) I read with interest your SE calendar of August. Shouldn't you add the AT-eclipse of 31 August 1030? This must have been an important eclipse. You can read a lot about it in Ginzel's "Beitr=E4ge zur Kenntniss der Sonnenfinsternisse". The eclipse has a lot to do with King Olaf (of Norway) his death. Olaf was born in AD 995 and in 1015 he conquered the land of Trondheim. In 1030, he fought the battle of Sticklastadt (NE of Trondheim) where he died. This was on a Wednesday 29 July. Only 2 years later, Olaf was worshipped as a saint. In Sigvatr's chronicle, who was a servant of Olaf during 15 years, he tells about a total solar eclipse on the day Olaf died. The only Wednesday 29 July between 1028 en 1033 is this of 1030 but the eclipse took place on 31 August. Sigvatr was not with Olaf when he died. He just heard it from others. Maybe, he associated the eclipse with Olaf's death.

2) In your list of Minor Planets, named after solar eclipse-interested people, shouldn't we add Ignace Naudts (Minor Planet five thousand and ...). Ignace went to Finland to see the TSE of 1990 and to Mexico in 1991. One year later he became ill and he died in December 1992. When he was ill, he told me several times that he liked to go to Bolivia in 1994 and of course he wanted to see the eclipse of 1999. Although he was not a real eclipsechaser, he was very deeply interested in mathematical astronomy.



Eclipse posters anno
2002 by PP

SEDates

Meeting Announcements from Solar News

UK Astronomy Society/UK Solar Physics Joint Meeting

From Gerry Doyle <jgd@star.arm.ac.uk> 21 Jun 2002

The next UK National Astronomy Meeting plus the annual UK Solar Physics meeting held be held in Dublin Castle, Ireland from April 7-11, 2003. Details on the programme, plus registration information may be obtained from the WEB site:

<http://star.arm.ac.uk/nam2003/>

Workshop Series on Solar Flare Physics in the RHESSI Era

From "Brian R. Dennis" <Brian.R.Dennis.1@gsfc.nasa.gov> 27 Jun 2002

A series of workshops is planned to address specific problems in high-energy solar flare physics that can be addressed with the RHESSI mission. General workshops will be held approximately annually with smaller, topical workshops in between. The first general workshop will be held on October 17 - 20 in Berkeley following the COSPAR meeting in Houston. To participate in these workshops, we are asking that individuals submit a short summary of their proposed workshop-related activities. Further details on the workshops and the application process can be found at the following URL:

http://www.gdeanoff.uah.edu/RHESSI_Workshops.htm

Magnetic Reconnection and the Dynamic Sun

From Peter Cargill <p.cargill@ic.ac.uk> 1 Jul 2002

Magnetic Reconnection and the Dynamic Sun 8 - 10 September 2003, St Andrews, Scotland. 1st Announcement

Magnetic reconnection is a phenomenon of fundamental importance in many areas of laboratory, solar and space plasma physics and astrophysics, yet a complete description is proving elusive. This conference is being held in honour of the 60th birthday of Professor Eric Priest, FRS, a leading figure in reconnection physics for the 35 last years, and will assess the state of the field with particular reference to the Sun, and look at future prospects.

The scientific programme will be split between invited talks on the subject by leading figures, and contributed talks from young researchers. We anticipate sessions on: Reconnection theory; Reconnection in laboratory, magnetospheric and astrophysical plasmas, and Reconnection in the context of the solar atmosphere, solar interior, coronal heating and solar flares. The majority of the meeting will be devoted to reconnection occurring in solar phenomena.

It is aimed to keep costs as low as possible to facilitate the attendance of students and post-docs. Accommodation will be provided in University Halls of Residence and we expect to provide an all-inclusive package that covers all meeting costs (including social events). Details will be announced in the next few months.

Further information can be found on the conference web site (<http://www-solar.mcs.st-and.ac.uk/~mhd03>) or from any of the organisers (e-mail addresses below).

Scientific Organising Committee: Alan Hood (St Andrews: alan@mcs.st-and.ac.uk), Peter Cargill (Imperial College: p.cargill@ic.ac.uk), Phillipa Browning (UMIST: p.browning@umist.ac.uk).

Local Organising Committee: Alan Hood (Chairman), Alison Kerracher (Secretary), Daniel Brown, Catherine Gerrard, Duncan Mackay and Clare Parnell.

SEScannings

Journal of the British Astronomical Association, 2000 June Vol. 112 No. 3

Pages 112 and 123: Solar Section 2000 January and February by Geoff Elston: With prominence pictures of February 28.

Pages 151 and 152: How accurate are my sunspot observations by R. J. Livesey: A comparison between his own observations with the published data. The writer kept a watch on the sun since 1958.

Pages 153 to 155: A simple estimate of the relative frequencies of different types of solar eclipses by J. Buus: The paper provides a simplified description in terms of two parameters only. The relation between the various eclipse types. The relative frequencies of different eclipse types. The writer mentions that it is the purpose to derive simple results rather than achieve a high degree of accuracy.

Index SENL July 2002

From: Patrick Poitevin To: SOLARECLIP-SES@AULA.COM Date: Sun, 07 Jul 2002 21:39:30

Please find herewith the Index of the July 2002 issue of the Solar Eclipse Newsletter (SENL). Beside the topic, the page number is listed. As you will notice, lots of 10-11 June 2002 annular eclipse reports and lots of pictures.

...\...

See the latest SENL and also the complete SENL Index since November 1996 at <http://www.j.w.edmonds.btinternet.co.uk>

The SENL will be soon on the WebPages of Fred Espenak/NASA. See <http://sunearth.gsfc.nasa.gov/eclipse/SENL/> and the index at <http://www.mreclipse.com/SENL/SENInde.htm> with example: SENL0011.pdf <http://sunearth.gsfc.nasa.gov/eclipse/SENL/SENL0011.pdf> Comments and contributions are welcome at patrick_poitevin@hotmail.com And ... keep those solar eclipse related messages coming ... Best Regards, Patrick and Joanne

From: FAMA FAMA

In Mexico Exist a large tradition in Sky Observation!

From: FAMA FAMA

Mexicans have the tradition to observed solar eclipses from 2002 B.C. from the maya tradition. !



SENL July 2002 NOW ONLINE!

From: FRED ESPENAK To: SOLARECLIP-SES@AULA.COM Date: Fri, 12 Jul 2002 21:41:02
eclipse@hydra.carleton.ca

Joanne Poitevin has prepared a new issue of the SENL (Solar Eclipse Newsletter) for the month of July 2002. It is so big that she had to split it into two parts: Part A and Part B!

All issues are online in pdf format and can be accessed via the SENL index page of MrEclipse.com: <http://www.mreclipse.com/SENL/SENInde.htm>

Other recent issues currently linked from the above page include:

SENL - January 2002 - Part A (0.7 MB pdf file*)
SENL - January 2002 - Part B (1.3 MB pdf file*)
SENL - February 2002 (1.2 MB pdf file*)
SENL - March 2002 - Part A (0.7 MB pdf file*)
SENL - March 2002 - Part B (0.8 MB pdf file*)
SENL - April 2002 (1.1 MB pdf file*)
SENL - May 2002 - Part A (1.1 MB pdf file*)
SENL - May 2002 - Part B (0.6 MB pdf file*)
SENL - June 2002 - Part A (0.5 MB pdf file*)
SENL - June 2002 - Part B (0.8 MB pdf file*)
SENL - July 2002 - Part A (0.8 MB pdf file*)
SENL - July 2002 - Part B (1.0 MB pdf file*)

Note that all these files are in Adobe pdf format and can only be read with Adobe Acrobat Reader. This software is free and can be downloaded from Adobe's web site (<http://www.adobe.com/>). As always, thanks for the hard work Joanne! - Fred

SEScannings

Bulgarian Eclipse 1999 Proceedings

From: Patrick Poitevin To: SOLARECLIPSES@AULA.COM
Date: Tue, 16 Jul 2002 21:43:38

Bulgarian Eclipse 1999 Proceedings From Ken Phillips
<phillips@solg2.bnscl.ac.uk> 9 Jul 2002

The total solar eclipse of August 11, 1999, was visible along a narrow track crossing Europe and south-western parts of Asia, ending in India. Although much of western Europe was cloudy on the occasion, Bulgaria and Romania had mostly clear skies, offering teams of scientists gathered there an excellent view of the eclipsed sun and opportunities for solar research. Just over a year later, between September 11-15, 2000, an international conference was held in the Bulgarian town of Varna, near the 1999 eclipse totality path, to allow scientists to report on their findings. The Proceedings of this conference were recently published, and are now available for purchase. They contain 42 papers by authors from Britain, Georgia, Poland, Romania, Russia, and Turkey as well as Bulgaria, and cover topics about the solar corona and prominences, meteorological responses and biological effects during the eclipse. The Proceedings are dedicated to Professor Vladimir Dermendjiev who chaired the Scientific Organizing Committee and who carried out most of the arrangements for the conference; to the great sadness of everyone who knew him, he died only a few months after the conference.

The Proceedings are entitled "First Results of 1999 Total Eclipse Observations," and are published by "Professor Marin Drinov" Academic Publishing House, Sofia (Bulgaria), 2002 (ISBN 954-430-840-7, paperback, 312pp). The editors are Prof. Academician D. N. Mishev and Prof. Ken Phillips. The Proceedings are available direct from the publishers and may be ordered by FAX (FAX number is +359-2-704508) or by email (info@bgob.net). Readers familiar with Bulgarian can also use the Publisher's web site (<http://www.bgob.net>). From Ken Phillips K.J.H.Phillips@rl.ac.uk

Subject: Re: Bulgarian Eclipse 1999 Proceedings From: Bulgarian Online Bookshop Date: Thu, 18 Jul 2002 16:03:04

Dear Sirs, On respond to your request, please find enclosed information on the title you are interested in.

For overseas customers we highly recommend using air-mail postage which will cost USD 12.

We are taking the chance to send you also our shipping and payment instructions.

With kindest regards, Mrs Zheni Dikova Export Manager

Mishev, D, Phillips, K (ED). 2002. First results of 1999 total eclipse observations. 170x250, b/w pictures, tables. In English. Ppb, 311pp. USD 34.

This book contains the invited lectures and contributions presented at the International Conference "First Results of 1999 Total Eclipse Observations", held on September 11-15, 2000 in Varna. A wide variety of topics are addressed, including the following: The eclipsed Sun's Corona; Prominences; Terrestrial atmospheric Responses during the Eclipse; Biological and Other Effects during the Eclipse.

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(Continued on page 14)

SEScannings

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To ensure your order is not delayed and to save extra costs to both you and Pensoft, please cover all bank charges for bank-to-bank payments with no charges forwarded! Terms of payment: 30 days!

Films, documentaries, feature films, etc. mentioned in previous SENLs

From PP

- | | |
|----------|--|
| 199606 | Barabbas by Dino De Laurentiis with Anthony Quinn, 1962 |
| 1998 02 | Les chasseurs d'ombre -Shadow Chasers By Jean Marc Lariviere, 1999
Cycles of the Sky by The Infinite Frontier, Part 3, 1995
The Hawaii Special by Wonderstruck, 1991
The Black Sun by Horizon, 1992
Sun, Earth, Moon by National Geographic Society, 1995
Eclipse of the Century, NOVA, 1992
Eclipses of the Sun and Moon by EBF/AGI Earth Science Series, 1989
Éclipse de soleil by Decouverte, 1994
Eye on Hawaiian Skies by Tropical Visions, 1991
Éclipse 73 by Service du Film de Recherche Scientifique, 1973
Heather Couper's Guide to the Universe by Pioneer Productions, 1994
What is an eclipse by Phoenix BFA Films, 1985
Secret of the Sun by Stars series, 1988
Exploring the Total Eclipse of the Sun by JAJ Productions, 1991 |
| 1999 06 | The Mummy |
| 1999 08 | Eclipse Chasers by Chanel 4, 1995 |
| 1999 09a | IMAX movie of Eclipse 1999
Dark of the Sun, 1968 |
| 1999 09b | IMAX movie, 1999 |
| 1999 10 | Understanding the Universe: Beyond the Millennium, 1999 |
| 1999 11 | AWESOME, the souvenir video of the 1999 solar eclipse by York Films of England, 1999 |
| 1999 12 | The Eclipse Chasers by National Geographic, 1995
State of Dogs |
| 2000 08 | Hooked on the shadow by David Makepeace, 1998 |
| 2000 10 | Dolores Claiborne by Taylor Hackford
State of Dogs |
| 2000 11 | Film State of Dogs |
| 2000 12 | Operation Eclipse II (about 1954 eclipse) by Royal Canadian Air Force, 1954 |



(Continued on page 15)

SETalk

2001 01	Total Eclipse by Patrick Moore, 1999
2001 05b	ECLIPSE 99-AWESOME OFFICIAL VIDEO, 1999
2001 06a	Awesome, the official 1999 video, 1999 Solar Max IMAX Movie, 1999
2001 07	Eclipse Chasers by NGC, 1995
2001 09a	AWESOME, 1999
2001 09b	Cosmic Africa by Aland Pictures, 2001
2001 10	Les Chasseurs d'Ombre - Shadow Chasers by Jean Marc Lariviere,
2001 11b	Africa Total Eclipse by David Makepeace, 2001
2002 02	Barrabas
2002 03a	Solar Max, 1999



Eclipse Film Database

From: Jean Marc Larivière To: SOLARECLIP-SES@AULA.COM Date: Sat, 20 Jul 2002 22:53:14

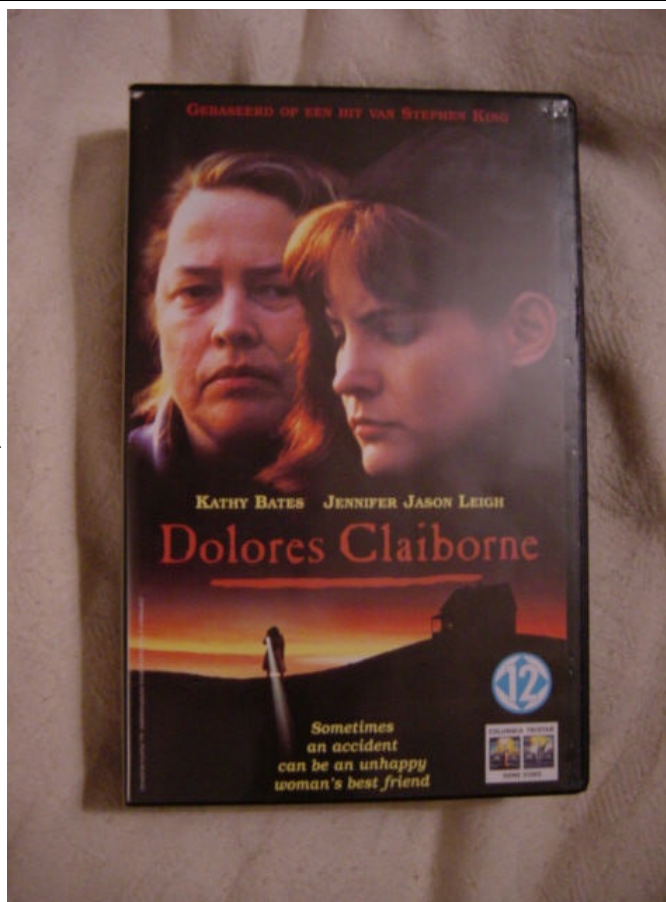
In order not to clutter the SEML, please respond to this post at : jeanmarc.lariviere@sympatico.ca

I am putting the finishing touches on an Eclipse Film Database that will be posted on the Web. The database will be divided in two lists : Films about eclipses and Films in which eclipses are featured. The database will be composed of the following fields : title, year of production, director, production company, distribution company, country, language, length and synopsis (including observations about the eclipse sequence, especially in the case of the second list).

So as not to generate unnecessary work I have first listed the films for which I presently have complete information followed by those for which information is missing. Your assistance will be greatly appreciated. Jean Marc Lariviere

FILMS ABOUT ECLIPSES

Solarmax
Operation Eclipse II
Flammes de Soleil
Chasing the Eclipse
Black Sun



(Continued on page 16)

SETalk

Eclipse of the Century
 Eye on Hawaiian Skies
 Eclipse 73
 Heather Couper's Guide to the Universe
 Les Chasseurs d'Ombre/Shadow Chasers
 Un moment d'obscurité
 Hooked on the Shadow
 Africa Total Eclipse
 Assess
 Solar Eclipse Campaign in Greece
 Stories of the Sun
 Eclipse 1999 graphics VNR
 The Hawaii Special
 Secret of the Sun
 Coincidence
 Les Terriens
 Chasing Shadows : The Story of a Modern Pilgrimage

Eclipse Chasers
 The Great Eclipse
 Sun, Earth, Moon
 Eclipses of the Sun and Moon
 What is an Eclipse
 Exploring the Total Eclipse of the Sun
 Le Soleil Roi
 Plein Feux, Soleil Noir
 Total Eclipse Live (1999 with Patrick Moore)
 Eclipses de soleil et éclipses de lune
 Lunar Aspects
 Cycle of the Sky
 Poes Poes Poes

FILMS FEATURING ECLIPSES

Out to Sea
 L'éclipse de soleil en pleine lune
 Barrabas
 Ladyhawke
 A Connecticut Yankee in King Arthur's Court (1989)
 Baraka
 Farinelli : il castrato
 Eclipse (Podeswa)
 Dolores Clairborne
 State of Dogs
 Le peuple migrateur/The Winged Migration
 Kandahar
 The Mummy
 2001 : A Space Odyssey
 Fantasia

 Superman 4 : The Quest for Peace
 The 13th Sign
 Up Close and Personal
 Young Connecticut Yankee in King Arthur's Court (1995)

Mermaids
 Days of the Eclipse (Sokurov)
 Dragonslayer
 Mr. Hobbs Take a Vacation
 A Connecticut Yankee in King Arthur's Court (1949)
 Eclipse de Sol (1943)
 Eclipse de Sol (1912)
 Fantasia
 A Connecticut Yankee (1931)
 The Connecticut Yankee (1910)
 How I Saw the Eclipse (1900)
 Journey to the Black Sun
 Connecticut Yankee in King Arthur's Court (1978)
 A Connecticut Yankee (1955)

From: Rybrks1@cs.com

While in Mexico June 10 a few people told me of a film assembled/shot by Dave Peacemaker which is reputed as worth seeing. Do I have the correct author ? If so, how can I purchase a copy of it? Ray Brooks

From: Bill Ronald

Hi Ray, The film maker is David Makepeace. The film is "Hooked on the Shadow".

His webpage is: <http://www.eclipseguy.com/> There is a link to order the film there (US\$42.00). Cheers ... Bill

From: David Makepeace

Bill - thanks for stepping in for the save. Both of my eclipse films have been listed in Jean Marc Lariviere's data base of Eclipses in Film. "Hooked On The Shadow" and "Africa Total Eclipse" are always available on my website for the above noted price (includes shipping in N. America).

If anyone out there can help my Canadian eclipse associate Jean Marc complete the data base it will be the first of its kind anywhere. Thanks in advance...



SETalk

Eclipses in movie

From: Katherine Low To: SOLARECLIPSES@AULA.COM Date: Wed, 03 Jul 2002 19:30:15

Since some of you are interesting in movies related to eclipses, this may be of interest. I just read in the magazine from 'Kaaithheater' (=theatre near the quay at Brussels) announcing their next season's program that there will be a new production called 'Poes Poes Poes'. This is a story of a group of people going to watch the eclipse of 1999 in a Walloon village (South Belgian region). The production consists of a five part film series, announced as 'a serial, theatre on big screen'. The scenario is after the work of the Flemish author Paul Mennes. The film will be directed by Frank Van Passel, known from Manneken Pis, Terug naar Oosterdonk and Villa des Roses. The film will only be shown in theaters in Belgium and Europe, at a rate of one episode per week. In the Kaaithheater they will all be shown in one marathon session between 24 and 28 June 2003 (no real eclipse on those days).

I don't know much what the story is about and whether some images of the real eclipse will be shown (it is rather low budget). Apparently it is about 2 rivaling television teams that want to shoot the most exclusive pictures on the event, much to the disgust of the local population. There are also some apocalyptic situations (related to the eclipse?). Cheers, Kris Delcourte

Partial phase photography with coloured filters

From: Geoff To: SOLARECLIPSES@AULA.COM Date: Tue, 02 Jul 2002 01:03:24

Hey there, A while ago a few of us discussed using filters (such as gelatin ones) to use in conjunction with solar filters to make the sun appear an orange or yellow colour. I was just wondering if it would not be possible to use something as simple as cellophane (sp?) - I'm not sure what its called in america or europe.. its this really thin clear coloured plastic paper stuff! It sounds tacky but I don't see why it wouldnt work?

Any comments would be good, Thanks, Geoff.

From: GMadden

This is actually a very interesting idea.

New packaging materials for perishable foods like potatoe chips and other snack items have fairly sophisticated coatings to keep certain wavelengths of light away from the merchandise inside.

It would be interesting to try some of these in various combinations and various numbers of layers to test their effect on the light of the sun. madden/rochester

From: 76630,2206

Geoff--the cellophane could work. It is up to your judgement about the color.

Please bear in mind that color film is balanced for 5500K or thereabouts. This means that white in images taken in full sunlight is truly white with no color cast and that the colors in the image are true. So, your partial eclipse images ought to be white or corrected to white.

You can also manipulate them in photoshop later.

Come to think of it, the sun warms up only within a few degrees of the horizon. So, partial eclipse images that are orange-yellow are not quite accurate.

I invite anyone in the group to correct me if I am wrong. cheers/Robert B Slobins

(Continued on page 18)

SETalk

From: Geoff

Robert-- I'm mainly interested in this method for a multiple exposure sequence of the eclipse as opposed to telephoto shots of the partial phases. The sequence isn't as pleasing with white suns against a coloured background, whereas the colour of a telephoto sun doesn't really matter because it is against a black background. Mainly I want orange suns for aesthetic purposes, because the sequence resembles a wide field, almost naked eye view of the eclipse, and in this case, orange-yellow suns seem more realistic. --Geoff

From: Mick Wolf

Geoff--the cellophane could work. It is up to your judgement about the color.

Please bear in mind that color film is balanced for 5500K or thereabouts. This means that white in images taken in full sunlight is truly white with no color cast and that the colors in the image are true. So, your partial eclipse images ought to be white or corrected to white.

You can also manipulate them in photoshop later.

Geoff, you can use Kodak WRATTEN filters which are available from most photographic stores. But, your exposure must be correct or there will be a colour shift. Mick Wolf.

From: GMadden

I think one can use the potato chip bag material without a solar filter so long as one does not view through the lens. This means that one must focus first using a solar filter and then replace it with the various layer(s) of materials that one wishes to experiment with.

Regarding CCD's, I have 90 seconds of unprotected TC video from Zambia. I would really like to know the absolute limit for exposure to direct sunlight on a CCD. All I have found are anecdotes and suggestions and guesses. Has anyone looked into this formally? madden/rochester

From: Assoc Prof J R Huddle

Dear Helioeccentrics, Please remember that neither cellophane or gelatin (including Wratten) filters are safe for direct solar viewing. And potato-chip bags do not have a thick enough coating of aluminum to be safe. If you plan to use such materials with a single-lens reflex (SLR) camera, you have to use them in addition to a safe solar filter.

However, such a filter may be used by itself with a camcorder or digital camera, since the light from the sun is absorbed in the CCD chip. The CCD's output (what you see on the screen or viewfinder) cannot become intense enough to harm your eyes. A number of us on the SEML have imaged the sun for periods up to a few minutes after third contact using a camcorder with no filter, and this does not seem to harm the camcorder. I don't know if anyone has done this with a digital still camera yet, but since the CCD and electronics are essentially the same as in a camcorder, it should be OK.

Be safe! Don't let your next solar eclipse be your last one! Jim Huddle

From: Raymond Badgerow

Hello there, I made such a device for the June 10th annular, but never got too use it for the intended purpose. To do so, I used 1/4" foam board cut to 4X4" size with a hole in the middle sized for my 300 mm zoom lens. There was mylar placed underneath the top part held on by tape. I placed an orange filter, bought at a camera store beneath the mylar (on the lens side). It too was taped on too the bottom piece of foam board. The intervening space was filled up using cardboard cut around it. The entire assembly was then firmly held together by duct tape. In essence what I made was a filter sandwich.

(Continued on page 19)

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The brightness of the Sun through the device was equal to a #12 welders glass so it was not meant for visual use, just photographic. I never had to field test the device due to the clouds, however I did see the Sun through it during our cruise on Bandaras Bay, June 8th. If only eclipse day was like that. Hope this helps. Ray

From: Geoff

Ray - Thats what I am thinking of doing. Does it matter which filter you have closest to the lens (ie coloured or solar filter)?

You could always test it out on a full sun, just to see the colour.. --Geoff

From: Assoc Prof J R Huddle

It should not make much difference which filter is on top, but I would place the densest filter closest to the sun. Constant exposure to the intense solar radiation may damage filters not made for that purpose, so put your safe solar filter closest to the sun. Jim Huddle

From: Raymond Badgerow

Geoff- I put the coloured filter closest to the lens. BTW, I did test it against the open Sun and it appeared orange. The arrangement would then be foam board-mylar-orange filter-foam board. Give it a try. Ray

New Moon July 2002

From: Rybrks1@cs.com To: SOLARECLIPSES@AULA.COM Date: Wed, 03 Jul 2002 16:22:40

New Moon this month, July 10, 2002

This new moon is in Saros 175 and will arrive on Earth in 600 years on July 5, 2597 in the north as a partial eclipse. That is almost exactly one saros year away from now. From this July to that July. During that saros year the new moon will move away from association with perigee to association with apogee so when it arrives as central eclipses they will be annular. (New Moon now is four days before perigee, the partials will arrive centered on apogee)

Saros 175 leaves Earth in year 3841 near perigee so there are about as many totals as annulars for the series.

It is an ascending node new moon series so it migrates north to south. That is why it passes north of the Sun this month. But if we could take the elevator 6700 miles above the Earth's limb we would witness a total solar eclipse of 35 seconds duration in the Vertical Fundamental Plane.

**Virus attack in the name of F. Espenak!**

From: Bob Morris To: SE from LRM <solareclipses@Aula.com> Date: Mon, 08 Jul 2002 14:35:59

Just got a letter from Ellen.Bruijns@eu.apbiotech.com entitled "F. Espenak". It was obviously a virus attack, which I deleted. Return to sender bounced. Bob Morris

From: Patrick Poitevin

Just to make it clear to all SEML subscribers (again). The SEML is virus safe for 99.9999 percent. It is the income and job of the listserver EmailMasters. Every single update is done many times, over and over, all the time, and with the latest software!!!!

The reason that the subject contains (SE) is that the whole address book of the contaminated sender will get a random sent mail. In this case a (SE) message. It has nothing to do with the SEML.

Please do NOT send virus messages to the SEML. It is one of the SEML rules which has been mentioned many times. Thank you.

Do not reply on this mail on the SEML either, but you can send me a personal message. Best regards, Patrick

SETalk

"begs the question"

From: Jay.M.Pasachoff@williams.edu To: SOLARECLIPSES@AULA.COM Date: Wed, 03 Jul 2002 12:24:33

In message <200207030100_MC3-1-4C5-6980@compuserve.com> you write: >Message text written by INTERNET:SOLARECLIPSES@AULA.COM 'Which begs the question...'

Actually, "begs the question" means "avoids the question," not "requires an answer"; from the American Heritage Dictionary: begs: To evade; dodge: a speech that begged the real issues. b. To take for granted without proof: beg the point in a dispute.

From: Glenn Schneider @ Home

I always appreciate Jay's insistence on keeping my grammar, syntax, and spelling correct (as this saves me the time from worrying about it ;-)). Though I almost always defer, in this context, I believe "beg" cannot be taken in isolation, but the phrase "begging the question" (origin: *petitio principii*) in totality* has the implied meaning "to improperly take for granted" (more in line with [b] in AHD. Hurricanes and TSE seemed such odd bed-fellows I had though the question/proposition was quite absurd and that the absence of such an event in the historical record (an observation of a TSE during a hurricane) was de facto evidence of the mutual exclusivity of these natural phenomena and a logical conclusion to the assumed (implicit) premise.

Perhaps I am wrong here, but I was interested enough to follow up.

[* no pun intended. Not a reference to a TSE, but by inclusion begs the question

as to why Pat should not object to this reply being "off topic".]

References: Barker, Stephen F. The Elements of Logic Fifth, Edition. McGraw-Hill, 1989., pp. 159. Copi, Irving M. and Cohen, Carl. Introduction to Logic. Eighth Edition, Macmillan, 1990, pp. 102.

From: 76630,2206 save contact

Jay-- Isn't English fun? Now I am going to have to explain this to my wife....

After several expeditions to places like India, I do not see too much avoidance by beggars. cheers/Robert B Slobins

From: Patrick Poitevin save contact

Dear SEML subscribers, For those sending messages about tornados, hurricanes and English spelling errors (or discussions), please send them privately and not to the SEML. Thank you.

It is very cheeky sending messages with the assumption that it is off topic. Just do not send them, and if doubt, just send them to the SEML Owner. Thank you for your understanding.

Keep those messages solar eclipse related! This is not a chat list. Many SEML subscribers are already overloaded with messages. With such non solar eclipse related messages, the amount of messages only piles up. Best regards, Patrick

Orion Cataloge Eclipse Photo

From: Harvey Wasserman To: SOLARECLIPSES@AULA.COM Date: Sun, 14 Jul 2002 13:58:46

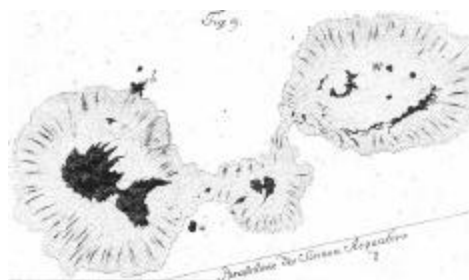
Does anybody take credit for the total eclipse picture in the new Orion telescope & Binoculars cataloge? It is on page 33 and appears to me to be from 1999. Harvey Wasserman

Photo and image archives

From: 76630,2206 To: "INTERNET: SOLARECLIPSES@AULA.COM" <SOLARECLIPSES@AULA.COM> Date: Sun, 07 Jul 2002 22:26:55

I have been playing with this in my head for a while:

Is there an archive of solar eclipse images from the "beginning", e.g. detailed drawings through the first photo of 1851 to now? I am particularly interested in images of 5 Feb 1962, when five planets gathered around the solar eclipse. A 105 mm lens would have produced a very nice image! If not, what about constructing one? cheers/Robert B Slobins



SETalk

2009 total eclipse south of Japan in July

From: Olivier "Klipsi" Staiger To: SOLARECLIP-SES@AULA.COM Date: Tue, 02 Jul 2002 20:06:27

in 2009 , in July, the longest total solar eclipse of the century will occur , in the Ocean south of Japan. you may want to get there by ship.. but not right now. we're lucky the eclipse is not right now... check this out: http://www.sat.dundee.ac.uk/pdus/JV/200207020900JV1_g.jpg wow !

From: Glenn Schneider @ Home

Which begs the question... Has anyone ever observed an eclipse through the eye of a hurricane? Now THAT would be a story worth telling... Glenn Schneider

From: 76630,2206

Hurricane Gracie ruined the plans of New Englanders on 2 October 1959. --Robert B Slobins

From: Olivier "Klipsi" Staiger

> Which begs the question... Has anyone ever observed an eclipse through the eye of a hurricane? Now THAT would be a story worth telling...

wow! now that's a challenge to pick up ! ;-) Hey, I met Jim Leonard (a.k.a. Cyclone Jim) last month, he has been in 55 hurricanes !!! <http://www.cyclonejim.com/> but I don't think he saw an eclipse while in the eye.

now, July 2009 may actually become a good candidate for that challenge. July brings typhoons in the area where the eclipse will occur, as we see right now. This current storm, named " Rammasun " (or is it Ramma-Sun ?? ;-)) , is currently heading to an area just east of Shanghai, then west of Seoul and then seems to slam into North Korea. <http://www.npmoc.navy.mil/jtwc/warnings/wp0902.gif> Ouch !

by the way, in respect to last June 10th, , another tropical storm, named Chataan, probably to become a Typhoon soon, is heading straight to Guam right now. <http://www.npmoc.navy.mil/jtwc/warnings/wp0802.gif>

speaking about storms and eclipses: you know the 2012 May 20 annular will end in the Texas Panhandle at sunset. May is a major month for tornadic storms in the area. So my dream is to see the sunset eclipse side-by-side with a tornado. Could happen. Just last June 23 in South Dakota a great tornado was observed near sunset, see http://silverliningtours.com/silver2/2002June23_18.jpg by the way, an IMAX team was there, too, filming the event ! More pix from that won-

derful event at: <http://silverliningtours.com/silver2/2002June23TornadoFest.htm> Klipsi Paparazzo del Cielo

From: 76630,2206

Klipsi:

1--Typhoons are a factor for 22 July 2009. We must also take into account the tremendous air pollution in Chinese cities.

I knew a communications specialist who was setting up a network in Shanghai. Most days, he could barely see two blocks or the sun.

2--Most tornadoes move west-to-east. This means that you would be hard-pressed to see the sunset in back of one, and if you were to do so, you'd be busy running away. I would be keeping my astronomy and meteorology separate. cheers/Robert B Slobins

From: Rybrks1@cs.com

I had tickets in my hand to fly down to the Carolinas for Hurricane Hugo to see the eyemajor item on my To Do List.

But it came onshore at night and I didn;t think the quarter moon would provide enough light to see the wall of the eye very well. Ray Brooks

From: Richard Monk

Intrigued by the recent "discussions" about this event, I have generated some data tables for it and produced both pushpin sets (for Encarta Atlas) and GPS waypoint sets (for Garmin). Looking at the path over China and Shanghai in particular, does suggest a mouthwatering prospect (smog permitting of course). I have put some more captured map images and both these GPS waypoint and Atlas pushpin sets on my website.

One curious point though; I note that at the start of the eclipse and at the end my tables have generated duration times in excess of 3 minutes, whereas I might have expected something in the region of seconds. Is this normal or is there something wrong with my calculations? Richard Monk

From: Peter Tiedt

Richard Duration at beginning and end of the path depends

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SETalk

on the size of the umbral shadow as it intersects the earth's limb. For a moon close to perigee (as this one is) and earth at aphelion the shadow is large, therefore more duration.

Others will no doubt give a more technical explanation ;-)

If you have Starry Night, play with that - use the view from Moon.

From: Michael Gill

Richard, For a person at the sunrise/sunset portion of a total solar eclipse track the greater distance from the Moon (smaller angular size) and the greater ground velocity of the umbra compared to an observer watching at the local noon point of the track do indeed shorten the eclipse.

These effects are partially offset by the greater eccentricity of the umbral ellipse for a sunset observer. Here, the umbra is "stretched" across the Earth's surface, while for a local noon observer the umbra's semi-major axis is at a minimum.

Flicking through Fred Espenak's "Fifty Year Travel Guide" (a.k.a. Fifty Year Canon of Solar Eclipses) you can see that the 2009 is not exceptional for the ratio of maximum eclipse duration to sunset duration:

2002 TSE

Maximum eclipse duration = 123.7 seconds

Sunset duration = 22.3 seconds

Ratio of sunset duration to eclipse maximum duration = 18%

2006 TSE

Maximum eclipse duration = 246.7 seconds

Sunset duration = 111.5 seconds

Ratio of sunset duration to eclipse maximum duration = 45.2%

2008 TSE

Maximum eclipse duration = 147.2 seconds

Sunset duration = 88.8 seconds

Ratio of sunset duration to eclipse maximum duration = 60.3%

2009 TSE

Maximum eclipse duration = 398.9 seconds

Sunset duration = 188.8 seconds

Ratio of sunset duration to eclipse maximum duration = 47.3%

2010 TSE

Maximum eclipse duration = 320.2 seconds

Sunset duration = 166.8 seconds

Ratio of sunset duration to eclipse maximum duration = 52.1%

You can see that when the Earth is near aphelion (2008, 2009 and 2010 events) the reduction in angular size for the sunset observer has less of an effect on duration than it does at an event when the Earth is close to perihelion (2002).

For the 2008 TSE, the eclipse maximum occurs at a high latitude while the sunset point lies much closer to the tropics. A sunset observer therefore benefits more at this eclipse from the Earth's rotation than an observer at the point of greatest eclipse, which probably helps to account for the higher ratio at this event. Michael Gill

From: Crocker, Tony (FSA)

For a person at the sunrise/sunset portion of an ANNULAR solar eclipse track the greater distance from the Moon (smaller angular size) and the greater ground velocity of the umbra compared to an observer watching at the local noon point of the track have OPPOSITE effects upon duration of annularity.

I think it is most useful to compare the DIFFERENCE in sunset to maximum eclipse duration, as exemplified by the upcoming hybrid eclipse of 2005:

Maximum eclipse duration = 42 seconds total

Sunset duration = 31 seconds annular

Ratio of sunset duration to eclipse maximum duration = -74%

Difference = 73 seconds

Michael Gill's examples:

2002 TSE

Maximum eclipse duration = 123.7 seconds

Sunset duration = 22.3 seconds

Difference = 101.4 seconds

2006 TSE

Maximum eclipse duration = 246.7 seconds

Sunset duration = 111.5 seconds

Difference = 135.2 seconds

2008 TSE

Maximum eclipse duration = 147.2 seconds

Sunset duration = 88.8 seconds

Difference = 58.4 seconds

2009 TSE

Maximum eclipse duration = 398.9 seconds

Sunset duration = 188.8 seconds

Difference = 210.1 seconds

SETalk

2010 TSE

Maximum eclipse duration = 320.2 seconds

Sunset duration = 166.8 seconds

Difference = 153.4 seconds

For deep annulars the ground velocity is the overriding factor:

1992 ASE

Maximum eclipse duration = 700 seconds

Sunset duration = 442 seconds

Difference = 258 seconds

Ratio of sunset duration to eclipse maximum duration = 63%

While for short annulars the distance to the moon is more important:

2002 ASE

Maximum eclipse duration = 23 seconds

Sunset duration = 72 seconds

Difference = 49 seconds

Ratio of sunset duration to eclipse maximum duration = 313%

So to me the next question became to find eclipses where central duration is nearly constant through the entire length. A sample of recent annulars on Emapwin indicated this was likely at an annular duration of around 2 minutes. It turns out that the 2 recent annular Saros both come close to this duration 4 cycles from now:

January 2074 ASE

Maximum eclipse duration = 141 seconds

Sunrise duration = 135 seconds

Sunset duration = 141 seconds

Difference = 0-6 seconds

Ratio of sunrise/sunset duration to eclipse maximum duration = 96-100%

July 2074 ASE

Maximum eclipse duration = 117 seconds

Sunrise duration = 125 seconds

Sunset duration = 121 seconds

Difference = 4-8 seconds

Ratio of sunrise/sunset duration to eclipse maximum duration = 103-107%

From: Michael Gill

Tony, The next two events of Saros 121 provide good candidates (7 February 2008 and 17 February 2026).

The tables in Fred's Fifty Year Canon show the duration of annularity to be remarkably constant throughout these two high negative gamma events. Michael Gill

From: Crocker, Tony (FSA) save contact

I noted those, but I wanted to demonstrate that a low gamma, lengthy annular eclipse track could still have close to constant duration.

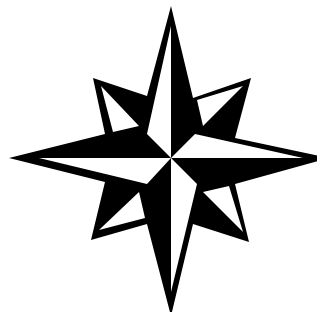
From: Richard Monk save contact

Some people have reported that the GPS table for TSE2009, that I put on my site (<http://homepage.ntlworld.com/rimonk/index.htm>), may be too big for some devices. I have therefore slimmed it down, basing the data on the requirements of a Garmin eTrex Vista. In fact all I have done is comment out all but 12 waypoints for the northern/southern limits and the centre line. This gives route lines over the Shanghai region but other areas of interest can be selected by simply moving these comments and selecting other points. I believe the eTrex will not handle more than 30 waypoints per route but I can't speak for other makes of GPS.

www.polarimage.fi

From: Stig Linander To: solareclipses@Aula.com Date: Tue, 09 Jul 2002 10:47:40

A message on the Danish "Astrolist" mentioned Pekka Parviainen's web site www.polarimage.fi. Lots of beautiful photos of PSE's (no totals), LE's, aurorae, noctilucent clouds, etc. But IMHO the most impressive photos are those of sunsets, including the most magnificent photos of the green flash I've seen. Enjoy! Stig.



SETalk

30 years ago of Cap Chat

From: Evan Zucker

It's hard to believe that it has been 30 years since the clouds grew thick over Cap-Chat on the Gaspé Peninsula, clouding out Glenn Schneider and me along with our fellow members of the Amateur Observers Society.

Joe Rao fortuitously selected a spot just up the road from us, and so the small break in the clouds that gave us a fleeting view of the crescent sun 30 seconds before totality gave him a short view of totality.

Although 10 July 72 was a major disappointment after my wildly successful first total solar eclipse on 7 March 70, I know how fortunate I am that I was never again clouded out on a central eclipse after that, at least not completely (1998 in Aruba was touch and go, and I was a bit nervous about the high clouds in Putre in 1994). -- EVAN

From: Pierre Arpin

I was there too because I'm from Quebec. I remember very well that eclipse because a member of our group forgot his telescope in Montreal but not his beer. :-)

I've been clouded out for my first 3 totalities (63,72 and 77). I had to wait until 79 to get one.

From: 76630,2206

I was on a hill in Arisaig, Nova Scotia overlooking the Northumberland Strait. This was previously photographed in Sky and Telescope. Clouds covered the sun from 7 to 4 minutes before totality and just after third contact. We were lucky.

It was a learning experience. Eric Fleisher was in my vicinity for this one. --Robert B Slobins

From: KCStarguy@aol.com

Ah yes 1972 glad you reminded us.

After my 1970 debacle, I saw my first total in Arasaig, Nova Scotia. So that eclipse is most special. My buddies and I from the Rhode Island Meteor Research Organization/ Skycrapers from Rhode Island, chose further east and south and escaped the clouds that those in the North experienced.

My first totality. We were right on the center line. The clouds moved in after totality. Even during the partial phases, cars were streaming down the road below possibly fleeing the clouds from the North for a glimpse.

What I remember the most is the shadow coming off the Northumberland straits and Prince Edward Island just across the bay and up our little mountain site. Glorious inner corona and prominence (still have that picture hanging up next to my desk).

I also remember that I tried to tape record the sounds to add to my pictures. I was using an old tiny reel to reel mimi cassette taperecorder. I turned it on and it started but as the shadow moved in I could barely see that the tape from the reel to reel was winding down on to my feet!!! I dropped it in disgust and concentrated on the pictures.

We were the first ones up on this knoll small mountain (after getting permission from local farmer). But others soon joined us over the next couple of days.

Little did I know, that some 29 years later, through this listserve, to my surprise, I would meet someone who chose to join my group, up on that knoll on that day in 1972. Robert B Slobins

(Continued on page 25)

SETalk

What goes around comes around?

From: Donald Watrous

From: Evan Zucker <ez@AbacusTotality.com>

10 July 72 was a major disappointment after my wildly successful first total solar eclipse on 7 March 70

I experienced these two the other way around. Although I was aware of the '70 eclipse, I couldn't even afford to go along with college schoolmates headed to [DC/VA?] to see the totality. Instead, I was walking along a road in New Jersey under some trees during the maximum. I noticed that the sunlight on the road through the trees looked like it had been painted in watercolors and was running. Wow!

Sometime in early '72, I saw in a Farmer's Almanac that there was going to be another total in the maritime provinces. I made a point of scheduling a vacation for that time. I hitchhiked up to Nova Scotia and went over to Prince Edward Island for a nice clear eclipse day. Friends I met later that day (back at the campsite) had been clouded out in New Brunswick. 30 years ago -- those were the days! Don

From: Kidinvs@aol.com

That was a special day for me, as well. It was my first Total Eclipse, providing the bite that has since sent me all over the world seeing others...7 in all. I was just 17 yrs. old, and got on an Eastern Airlines shuttle flight from LaGuardia airport that Saturday morning bound for Washington, DC. I was to connect with 4 other people on a small plane to Norfolk, VA. The flight was oversold. When the 5 of us started screaming that we had only 4 hours till totality, Eastern chartered a plane, and flew us right to Virginia Beach. I remember a crystal clear blue sky, and a warm day for March. It was the most amazing day of my life. Lack of funds kept me out of the eclipse chasing game until July, 1991. I have not missed one yet.... do I dare miss 2003??? Rick Brown www.eclipsesafaris.com

From: 76630,2206

My family was with me. We came from Fall River, MA... interesting how people from the same part of the world got together at the same place. My mother finally sat down with half of the sun gone to watch the eclipse and got a nasty sunburn by totality.

Moral of the story...if this is what the partial eclipse does to your skin, imagine what happens to the eyes without protection. We need to keep this in mind as we travel to eclipses, especially those who have a predisposition to skin cancer. --

Robert B Slobins

From: Bob Morris

I was in a Holiday Inn parking lot at Cape Charles, VA. on March 7, 1970. Perfect skies. Someone had taken a sheet and place it on a car, for shadow bands.

I too was clouded out on the north shore of the St. Lawrence in 1972. In any case, the traffic was so bad that there was no way we were going to reach the band of totality before totality. Everyone was on that road! Bob Morris

From: Kidinvs@aol.com

I could be wrong, but wasn't 11 years ago today one of the memorable days of our lives??? Ahh.. Baja, Calif...I had 40 people that I brought mostly from the US, almost all of them eclipse virgins. It was hot at the Hotel Spa Buena Vista, Roger Tuthill was set up on the hill just behind our site, and I will never forget the video that he produced where he is actually crying with the site that most of us beheld... for almost 7 minutes. What a day!!! Rick Brown www.eclipsesafaris.com

From: Dave Schmahl

That's true, is was. I was on the MV Empress in the Sea of Cortez near the point of longest duration. For us, totality lasted 6 minutes and 58 seconds. That was my first total eclipse experience. What an awe inspiring show! Since then, I've been trying to repeat that same feeling by seeing another eclipse, and then another...

From: Joel M. Moskowitz, M.D.



I was one of the eclipse virgins in Roger's group.

From: KCStarguy@aol.com

Don Sorry I forgot to include it. After I got back from Africa last summer, I decided to make panoramas of the 360 degree videos I shot in Hungary 1 minute before totality and the video I took during the middle of totality in Zambia. Here is the link. <http://members.aol.com/kcstarguy/blacksun/ringoffire.htm> ? questions, let me know

SETalk

In the year 2726 - National Holidays - Olympics Beijing

From: Onderbeke Julien To: solareclipses@aula.com
Date: Thu, 04 Jul 2002 22:26:46

Thanks to Patrick for posting the eclipsecalendar of July. Maybe the total solar eclipse of 21 July 2726 could be added. (21st of July is the national day of Belgium)

It must be the most beautiful total eclipse Europe will ever get. Depending on the value of delta T one accepts, the cities of Paris, Luxemburg, Vienna, Budapest and Bucharesti will be within the path of totality, while London and Brussels will be on the northern limit. In the early sixties, Jean Meeus investigated some calculations about this eclipse (when he discussed the subject of delta T).

The duration is also very long : about five and a half minutes, which must be very near to the absolute maximum for Western Europe.

We can only dream about it.

From: Pierre Arpin

Did somebody on this liste made a search to find total eclipses of the Sun occuring on a country celebrating its national holiday.

The only example I know is the oct. 12th 1977 eclipse passing over Colombia. (Clouded out for me)

That would be cool to celebrate a 4th or a 14th of july with a totality.

Emapwin doesn't offers that type of search.

From: 76630,2206

> Did somebody on this liste made a search to find total eclipses of the Sun occuring on a country celebrating its national holiday.

The only example I know is the oct. 12th 1977 eclipse passing over Colombia. (Clouded out for me)

That would be cool to celebrate a 4th or a 14th of july with a totality.

Emapwin doesn't offers that type of search.

Well, Pierre, eclipses occur across many cultures and nations. 4 or 14 July mean nothing to Canadians or Germans

respectively. Also, if an eclipse occurred on 4 July, say, in 2546, who is to say that the nation that celebrates this date now will exist then? And if an eclipse passed across that village near Ottawa before the confederation, what further meaning could have been derived. Furthermore, different peoples kept different calendars.

Religious holidays are a better choice. Christmas (2000), New Years Day (1889), Diwali (1995), Chinese New Year (1962) are examples. In 1995, the Indian government re-scheduled Diwali to the following days, as it would have been very bad luck to have a total solar eclipse on that feast day. (What then is the excuse for the near nuke war conditions in 2002?) The Balinese new year was involved with the 1988 eclipse.

Lunar eclipses are better: Jews celebrate full moon festivals in spring and fall-- Passover and Sukkoth. The last Passover total lunar eclipse was in 1968. I saw it during and after a Passover seder.

But even religions and cultures change and pass.

I am sure that there are eclipses on peoples' birthdays. Whatever the case, if we start talking about eclipses on birthdays and holidays, then it is very easy to get involved in eclipse astrology <yikes!>.

It is better in my view to let the eclipse be. We need to take current holidays into account so that we be prepared in advance--that photo stores may well be closed on such days for example. The universe has been set in its course and there is little that we can do about it except to be on centerline on time. cheers/Robert B Slobins

From: klipsi@bluewin.ch

>That would be cool to celebrate a 4th or a 14th of july with a totality.

the 2008 TSE occurs August 1st. This is swiss national independence day. However we will only have a tiny little partial eclipse .

another thought of occurence with a total eclipse: olympic games ! how spectacular it would be to have a total eclipse on the same day when Olympic Games have the closing ceremony : just when the olympic flame burns out - the Sun disappears , too ! Wow ! What a symbol ! now, in 2008, the TSE ends in China, and Beijing holds the summer olympics that year. however , I don't know the precise dates of the Games, it will probably be later (september ?) because I was told that late July / early August it is very

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SETalk

hot in Beijing. Also, the eclipse is not total in Beijing (where the closing ceremony will be held) but it is total at sunset a few miles from Xi'an (where the terracota army is).

Just a thought.. some day, it would be cool to have a total eclipse to coincide with the extinguishing of the Olympic flame.... Klipsi

From: 76630,2206

Klipsi: I'd be the last one to rain on your eclipse, but have you any idea about the complications involved if we had to have OUR tours compete against THEIR Olympics. --Robert B Slobins

From: Evan Zucker

According to the official site http://www.olympics.com/uk/games/beijing/index_uk.asp, the dates will be 25th July to 10th August 2008. The eclipse will be 1st August 2008. <http://sunearth.gsfc.nasa.gov/eclipse/SEplot/SEplot2001/SE2008Aug01T.gif>

According to TheSky, Beijing will see a very deep partial eclipse -- I would estimate about 95% -- with maximum eclipse occurring with the sun about 2 degrees above the horizon. I think this will get A LOT of press from the world's media. --EVAN

From: Olivier "Klipsi" Staiger

>I'd be the last one to rain on your eclipse, but have you any idea about the complications involved if we had to have OUR tours compete against THEIR Olympics.

well, now thanks to Evan we know it: the 2008 summer olympics in Beijing will actually coincide with the eclipse ! Totality does not get seen in Beijing, but you can count on lots, lots of overbooked hotels and flights if you want to see the eclipse in Xi'an or anywhere else in China, as most flights pass through Beijing.

I do wonder if the folks who decided the dates for the Games knew about the eclipse ? Many chinese friends I know are quite superstitious and I doubt they would have done the Olympics during the eclipse if they only knew about it . Klipsi

From: Jean Meeus

At Beijing (Peking), the solar eclipse of 2008 August 1 will be partial, with a maximum magnitude of 92%. Maximum eclipse will occur at 11:10 UT, at an altitude of 2 degrees, shortly before sunset. Last contact will take place after sunset.

At the same place, the eclipse of 2009 July 22 will be partial too. Maximum magnitude 73% at 01:32 UT, at an altitude of 49 degrees.

Except for large countries such as Russia or the U.S., total solar eclipses in a given country are rare events. It will be much rarer to have such an event exactly on that country's national holiday. But for Belgium the year 2726 will be a hit: that year, on Belgium's national holiday, July 21, there will occur a total eclipse. And what an eclipse! The path's width will be a large 287 kilometers, and in southern Belgium the duration of totality will exceed 5 minutes, almost the maximum possible for that geographical latitude. Jean Meeus

From: 76630,2206

What are the weather prospects for this eclipse? It can be seen in Siberia, Mongolia, and in Canada's Far North.

(Continued on page 28)

SETalk

I am sure that Beijing will be frightfully air-polluted. --Robert B Slobins

From : Julien Onderbeke (Belgium) Subject : Solar Eclipses and the Olympic Summer Games

One year ago I posted a message concerning the TSE of Beijing in 2008 and the Olympic Games. I thought the games would end on 1st August, but this isn't true. I guess the message can be read in the SENL of August 2001.

I searched for solar eclipses during the Olympic Summer Games during the period 1896-2008. The dates of the games can be found on www.olympic.org

The results :

1896 Athens(Greece) 6 April to 15 April

No solar eclipse

1900 Paris (France) 14 May to 28 October

TSE on 28 May 1900, visible in Paris as a PSE with a magnitude of 73 %. However, don't compare these games with the actual games. As you can see, the period was from May to October. It is quite possible that there were no sports events on that day. The games were held "in the shadow" of a great "World Exposition".

1904 Saint-Louis (USA) 1 July to 23 November

TSE on 9 September 1904, not visible in Saint-Louis.

1908 London, (Great-Britain), 27 April to 31 October

ASE on 28 June 1908, small PSE in London

1912 Stockholm (Sweden), 5 May to 27 July

No solar eclipse

1920 Antwerp (Belgium), 20 April to 12 September

PSE on 18 April 1920 in the Indian Ocean and Australia on the day Pope John Paul II is born. Not visible in Antwerp.

1924 Paris (France), 4 May to 27 July

PSE on 31 July 1924, invisible at Paris.

1928 Amsterdam (Netherlands), 17 May to 12 August

Very small PSE (magnitude 0,038) visible in Siberia (not in Amsterdam)

Non Central TSE in the South Atlantic Ocean (above Queen Maudland, Antarctica), of course not visible in Amsterdam, on 19 May 1928. The only games with 2 solar eclipses!

1932 Los Angeles (USA) 30 July to 14 August



(Continued on page 29)

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1936 Berlin (Germany) 1 to 16 August

1948 London (England), 29 July to 14 August

1952 Helsinki (Finland), 19 July to 3 August

No solar eclipses in these periods

1956, Melbourne (Australia), 22 November to 8 December

PSE on 2 December, visible in Europe and Asia, not in Australia

1960 Rome (Italy), 25 August to 11 September

1964 Tokyo (Japan), 10 oktober to 24 oktober

1968 Mexico City (Mexico), 12 October to 27 October

1972 Munich (Western Germany), 26 August to 11 September

1976 Montreal (Canada) 17 July to 1 August

1980 Moscow (USSR), 19 July to 3 August

1984 Los Angeles (USA), 28 July to 12 August

1988 Seoul (South Korea), 17 September to 12 October

1992 Barcelona (Spain), 25 July to 9 August

1996 Atlanta (USA), 19 July to 4 August

2000 Sidney (Australia), 15 September to 1 October

2004 Athens (Greece), 13 to 29 August

No solar eclipses in these periods

2008 Beijing (China), 25 July to 10 August

TSE on 1 August, 92 % at Beijing. Maybe the day to organise the marathon? Greetings, Julien

(The same investigations can be done for the Winter Games, I'm prepared if someone is interested)

From: Dale Ireland

If this is correct then we it would be nearly the worst possible set of circumstances for millions of retinas. A huge population, a huge press event, and a partial you could stare at without pain and without proper protection. Dale

From: Evan Zucker

At 10:03 PM 7/7/02, Dale wrote: If this is correct then we it would be nearly the worst possible set of circumstances for millions of retinas. A huge population, a huge press event, and a partial you could stare at without pain and without proper protection.



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The earlier stages of the eclipse could cause eye damage, but at maximum eclipse the sun will be just 2 degrees above the horizon. I think that would be pretty safe to observe, especially in polluted skies.

Looking ahead to 2009, I don't remember if anybody has posted any messages about this, but I was recently discussing this eclipse with a Chinese immigrant and how it will be visible from Shanghai. He mentioned that there is a large observatory near Shanghai in the city of Nanjing. It is known Zijinshan (Mt. Zijin) Observatory and Purple Mountain Observatory. Some links:

<http://www.travelchinaguide.com/attraction/jiangsu/nanjing/zijinshan.htm>

<http://www.chinats.com/nanjing/atwt.htm>

This is reported to be one of China's largest astronomical centers and specializes in solar observation. <http://china.candidemedia.com/html/dispatches/ten/10featurea.html>

Apparently, the Purple Mountain Observatory does its own independent eclipse forecasts and doesn't rely, like the rest of us, on the good services of Fred Espenak. Here's a report from June 19, 2001:

The Purple Mountain Observatory in Nanjing, capital of east China's Jiangsu Province, predicted that the first total solar eclipse of the new millennium will occur on June 21 and will be visible from different areas in southern Africa.

http://english.peopledaily.com.cn/200106/19/eng20010619_73006.html

According to TheSky, this observatory will be within the path of totality. This is reminiscent of 11 July 1991 when the Mauna Kea observatories experienced totality. -- EVAN

From: Crocker, Tony

As someone posted earlier here (and I verified by Emapwin), Beijing is 91% at sunset on the day of the closing ceremony, which typically starts shortly after sunset. This coincidence makes a 2008 China trip more attractive IMHO. I would attend some Olympic events, but obviously be elsewhere during the closing ceremony.

Another point is that the 2008 path in NW China is in a dry climate zone, while the 2009 path along the Yangtze Valley has very problematical weather prospects. (Am I right about this, Fred and Jay?)

From: Evan Zucker

The eclipse will be Friday, August 1, but according to the official Olympics web site, the Olympics go through Sunday, August 10, which almost certainly is when the closing ceremonies will be. -- EVAN

From: Crocker, Tony (FSA)

I stand corrected on dates of 2008 Olympics. Since July 25 is Saturday and August 10 Sunday, those are likely correct.

At the risk of being off-topic, I would encourage SEML members to consider an Olympic trip. Fears of overcrowding and price gouging are usually exaggerated. Salt Lake City was an outstanding experience and 1984 here in L.A. went extremely smoothly as well. This is not an American chauvinistic review, because Atlanta 1996 (which I did not attend) was supposedly not well organized for the spectators.

After Salt Lake I talked with one of our company executives who has been to several Summer Olympics, and he is skeptical of Athens 2004 but looks forward to Beijing. So I believe SEML members should view the combination of the Olympics and TSE 2008 as a positive incentive for travel.

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From: Marc Weihrauch

Dear shadow chasers, Beside that I claim that a lot of press will rather enhance safety awareness. When the media are informed by specialists, they can give out serious warnings. It did work in Europe three years ago: Most people knew that they had to use special filters, and eclipse shades were bestsellers. There'll always be some idiots who ignore all those warnings, and in 1999 many people had more luck than brains. (May I say so in English?) One case is well known of a young man from Berlin, who thought eclipse shades were for weeklings. Two circumstances saved him from permanent eye damage: First, clouds worked as a light natural filter. Second, he was too vain to wear the glasses he actually needed, so there was no sharp image of the sun on his retina...

However, more people will end up with their eyes damaged when they don't know about the eclipse beforehand. During a deep partial they will notice the effects and stare at the sun, unconscious of the peril. I guess that a press campaign and well prepared authorities can get the vast majority of people to protect themselves. Best regards Marc

From: Michael Gill

Purple Mountain Observatory certainly does its own independent eclipse forecasts. Bao-Lin Liu (who was at Purple Mountain Observatory for over thirty years) co-authored (along with Alan D. Fiala) the Canon of Lunar Eclipses 1500 B.C. - A.D. 3000 (ISBN 0-943396-37-9): <http://www.willbell.com/math/mc2.htm>

Using the presumed coordinates of Purple Mountain Observatory of latitude 32 degrees 4 minutes north and longitude 118 degrees 49 minutes east, then the observatory will be slightly too far north to enjoy totality in 2009 (magnitude 0.994).

Certainly, looking at the map of China on Richard Monk's website, Nanjing also lies outside the track of totality. Michael Gill



Accuracy of celestial phenomena

From : "Michael L. Gorodetsky" <gorm@hbar.phys.msu.ru>
To : HASTRO-L@LISTSERV.WVU.EDU Date : Thu, 11 Jul 2002 01:28:36 +0400

Dear Balt, I can not agree totally with your pessimism towards the value of DT in the past. DT have many components. Several of them are connected with forces which can be calculated according to different models and so have simple parabolic dependence on time:

1. Tidal lunar deceleration - this can be calculated from laser ranging measurement of lunar deceleration using conservation laws.
2. Tidal solar deceleration also well known
3. Acceleration due to tides in atmosphere the same
4. Friction in the oceans
5. Friction in the mantle

...
These accelerations play major role at large scale but smaller at the scale of decades. There should be no reasons why these sources of the change of DT varied significantly. And the works of Robert Newton and Stephenson clarified the values.

These DT values may be also checked at a very large scale of millions of years from corals and other fossils having daily and annual cycles (for example it was found that 400 mln years ago the year was 400 days). See for example Tidal Friction and the Earth's Rotation. Springer-Verlag, Berlin, Heidelberg, New-York, eds. P.Brosche and J.Sundermann, 1978

Another part is fluctuational and periodical terms connected with movement of the nucleus of the Earth and changes in the climate in polar ice hats, level of the ocean and so on .. However these terms are significant at the smaller scale and more or less average. Here we also may hope to obtain better knowledge in future from theoretical modelling of the Earth rotation (some positive results are already present), analysing ice-cores, tree rings and so on. Maximal difference from parabolic trend according to Stephenson from -500 to 2000 are of the order of 30 minutes. And these deviations does not look irregular. Fluctuational deviations which you mean have the order of only 1 minute and they can hardly affect seriously retrocalculations. So I am not so pessimistic. Say possible error in 3000BC may be of the order of an hour, and not hours. And the situation may be improved in future.

BI> Hi Victor, I'd like to elaborate a bit on dT:

(Continued on page 32)

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BI> deltaT, the dynamical time correction, is only known within a few seconds of error back to the early 19th century. Anything earlier than these times becomes speculation with errors in the several minutes to several hours range. Dates like 3000BC can be wildly off by hours.

BI> dT is not a function that will be known better with time, it behaves more like a random fluctuation. Jean Meeus's "Astronomical Algorithms" book has a nice table on page 79 with dynamical time corrections back to 1620.

BI> How anyone without a time machine could derive dT for many thousands of years back in time is beyond me. There are so many different possible influences that it seems very brave to claim dT to be -2 hours at 4000BC... Of course I'm open to any suggestions on how this kind of accuracy can be justified. Under the present assumptions, the accuracy of any ephemerides going back such a long time seem fairly questionable to me. Cheers - Balt

Best regards, Michael <mailto:gorm@hbar.phys.msu.ru>

From : Balthasar Indermuehle <balt@INDERMUEHLE.COM>

Hi Victor,

> So I can understand, that as long as we don't find a function behind this 'random' process, we indeed can be sure that dT will be unknown and unpredictable for times say around 3000 BCE.

The value is verifiable to a certain degree of accuracy (see Michael's email that followed mine). But small scale inaccuracy concerns remain.

> But if it is some random function, one even needs to go back to very year to find the full curve . It seems to be something like the C14 curve: some general trend but still some random issues.

>From what I read, the C14 analogy doesn't hold true because the C14 decay curve follows a well established physical process whereas dT is influenced by many random events; an earthquake analogy might be better (and even causally linked) because earth mantle movements do affect dT. Hard to tell when the next large scale tectonic movement will take place. Cheers - Balt

From : Balthasar Indermuehle <balt@INDERMUEHLE.COM>

...sent off to early, sorry. Here's the rest:

```
If iYear < 948 Then
  deltaTD = 2177 + 497 * tx + 44.1 * tx ^ 2
ElseIf iYear <= 1600 Or iYear > 2100 Then
  deltaTD = 102 + 102 * tx + 25.3 * tx ^ 2
ElseIf iYear < 2000 Then
  deltaTD = -183.5343 - 0.1472927 * iYear - 0.00003856419 * iYear ^ 2
+ 0.00000008706996 * iYear ^ 3
ElseIf iYear >= 2000 Then
  deltaTD = 102 + 102 * tx + 25.3 * tx ^ 2
  deltaTD = deltaTD + 0.37 * (iYear - 2100)
End If
```

Cheers - Balt

From : Balthasar Indermuehle <balt@INDERMUEHLE.COM>

A small addition I found in my source code library. This will calculate the dynamical time correction in seconds to about 5 seconds accuracy in the 20th century: Balthasar Indermuehle, M.Sc.



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> -----Original Message----- From: History of Astronomy Discussion Group [mailto:HASTRO-L@LISTSERV.WVU.EDU]
On Behalf Of Victor Reijs

> Hello Balthasar and others, Balthasar Indermuehle wrote: dT is not a function that will be known better with time, it behaves more like a random fluctuation. Jean Meeus's "Astronomical Algorithms" book has a nice table on page 79 with dynamical time corrections back to 1620.

> So I can understand, that as long as we don't find a function behind this 'random' process, we indeed can be sure that dT will be unknown and unpredictable for times say around 3000 BCE.

> > How anyone without a time machine could derive dT for many thousands of years back in time is beyond me.

> But if it is some random function, one even needs to go back to very year to find the full curve . It seems to be something like the C14 curve: some general trend but still some random issues. Is this the general idea at this moment?

>
> I know I am keeping on asking these question, but I just want to know where I should stop defining some kind of accuracy (so sorry for my rambling)! So updating my list of phenomena with ideas on possible accuracy: . declinations of planets (incl. sun and moon) We can use the JPL ephemeride (VSOP87) here with accepted accuracy up to say 3000 BCE. I understand this can be done at a positional accuracy at the arc min level around 3000 BCE. . delta-T I understood that at least the dT is still not fully known for former times (before 1600 CE), so there seems not to be any accurate historical record available (perhaps not yet found). It seems not to be possible to predict an eclipse with more accuracy than a few hours due the randomness of dT (certainly in times well before 1600 CE). . wrong position of star How accurately is precession known for 3000 BCE? Are there proper (JPL?) ephemerides that have this info already in (or is this at the same level of accuracy as Delta-T)? So do we also need here an accurate historical record (perhaps not yet found). . occulting moon/planet and star This is depending on dT AND precession. dT is already unknown, so combining this with precession will not make it more accuracy (so at least a few or more hours errors). Please provide your constant feedback. All the best, Victor

>
> URLs: <http://www.iol.ie/~geniet>
> <http://www.iol.ie/~geniet/eng/archaeocosmology.htm>
> <http://www.iol.ie/~geniet/maeshowe>
> <http://www.iol.ie/~geniet/setrise>
> <http://www.iol.ie/~geniet/irishstones>
> <http://www.iol.ie/~geniet/stpatrick>

From: Thomas Schmidt <schmidt@HOKI.IBP.FHG.DE>

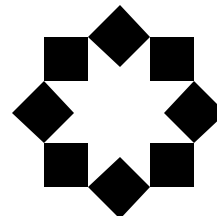
Victor Reijs wrote:

> > dT is not a function that will be known better with time, it behaves more like a random fluctuation. Jean Meeus's "Astronomical Algorithms" book has a nice table on page 79 with dynamical time corrections back to 1620.

> So I can understand, that as long as we don't find a function behind this 'random' process, we indeed can be sure that dT will be unknown and unpredictable for times say around 3000 BCE.

From ca. 1620 on we have telescopic observations which allow us to fix delta-T with an accuracy of the order of seconds (and improving towards the present to the level of microseconds). For the time between ca. 700 BC and 1620 AD a large number of suitable observations can be used to estimate delta-T. Stephenson [1], for example, could use more than 400 lunar and solar eclipses for this purpose. The result is a curve which shows a clear regular trend, with a lot of noise superimposed.

The general trend can be explained very well by astronomical and geophysical theory. The tides provide a mechanism which transfers angular momentum from the earth to the moon. The moon therefore accelerates in its orbit (which means it recedes from the earth, at a rate of ca. 4 cm per year. On this wider orbit, its angular speed is _less_, but its total energy and its angular



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momentum have indeed increased).

With lunar laser ranging measurements, this acceleration of the moon's orbital motion can be measured very precisely, so that the angular momentum transferred per unit time can be calculated. For the earth, the corresponding loss of angular momentum causes a slowing-down of the rotational rate; from the measured momentum loss we expect that the length of the day increases by ca. 2.3 milliseconds per century.

Another effect acting on the earth's rotational rate is any change of its moment of inertia (think of the ice skater who speeds her pirouette up by drawing her arms in). Careful surveying of satellite orbits has shown that the earth's flattening decreases slowly. That is, the equatorial bulge becomes less and the polar regions slowly lift up, still recovering from the heavy ice deposits during the ice age that have now melted ("postglacial rebound"). The measured change in flattening should lead to an increase in angular speed which corresponds to a shortening of the day by ca. 0.4 to 0.6 milliseconds per century.

The general trend of the `_observed_ delta-T` shows that the length of the day increases by ca. 1.7 milliseconds per century. This is pretty close to the sum of the two effects discussed above. So it seems the dominant factors affecting the rotation of the earth in the long term are reasonably well understood.

Beside these effects, there are still others. For example, redistribution of angular momentum between the earth's mantle and core, between the earth and the atmosphere etc. These factors contribute additional fluctuations on scales of decades, years, months etc.

As far as `delta-T` can be followed into the past (back to ca. 700 BC), it shows the expected parabolic trend, plus the additional fluctuations (some of which may be real, some of which may be due to poor data). Around 500 BC, `delta-T` has a value between four and five hours, with an uncertainty of maybe half an hour or an hour. There is no reason to expect that it changes its behaviour beyond 700 BC, so we may be allowed to extrapolate back; of course with increasing uncertainty. Going back to 3000 BC is probably quite courageous, and I won't guess what little certainty may be left there. You should probably not rely too much on such an extrapolation, but on the other hand `delta_t` itself increases faster than its uncertainty, and we are not `_completely_` in the dark.

Also, since you probably don't have any observations of that age to compare with your programs, the question is moot anyway. For the time for which you have observations, you also have a more or less secure `delta-T`. There may be some `_very_` ancient Chinese observations waiting to contribute to `delta-T` and your software tests.

Please also note that the question of `delta-T` is independent of the accuracy of the ephemerides themselves. The ephemerides are formulated in terms of strictly uniform Dynamic Time. `Delta-T` is only needed to evaluate the `_local_` time of the observer at some instant given in Dynamic Time. An error in `delta-T` only affects the local time when some event is observed, or the place where it can be observed. If the ephemerides say, for example, that an occultation of a star by Saturn has taken place, this will still be the case even with a wrong `delta-T`. Only the local circumstances of an observer will change accordingly.

[1] F.R. Stephenson: Historical Eclipses and Earth's Rotation Cambridge University Press 1997

> > How anyone without a time machine could derive `dT` for many thousands of years back in time is beyond me.

> But if it is some random function, one even needs to go back to very year to find the full curve. It seems to be something like the C14 curve: some general trend but still some random issues. Is this the general idea at this moment?

So it seems...

> I know I am keeping on asking these question, but I just want to know where I should stop defining some kind of accuracy (so sorry for my rambling)! So updating my list of phenomena with ideas on possible accuracy: . declinations of planets (incl. sun and moon) We can use the JPL ephemeride (VSOP87) here with accepted accuracy up to say 3000 BCE. I understand this can be done at a positional accuracy at the arc min level around 3000 BCE.

Of course the accuracy will degrade if you go back to 3000 BC, and there are no observations (known to me) beyond ca. 700

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BC against which the ephemerides could be tested. On the other hand, they seem to do generally well up to that point, and if we assume that they degrade gracefully, we might expect something along those lines in terms of accuracy (probably worse for the moon with its rapid motion and the acceleration term which dominates at remote times). For a definite answer concerning the expected accuracy at those times, you'd have to contact JPL.

Meanwhile I happen to have Bretagnon and Simon's "Planetary Programs and Tables from -4000 to +2800" handy. It dates from 1986 and gives series expansions which allow to compute planetary positions. Concerning the accuracy of their tables they say that it is limited mainly by the accuracy of the planetary theories, the precision of the mathematical representation (truncated series and polynomials), and the error increases when during reduction from heliocentric to geocentric coordinates the planet is close to the earth. From these effects and comparisons with numerically integrated ephemerides (especially JPL's DE102), they derive error estimates which are, for the time period -4000 to -2000:

Sun 0.0009°
 Mercury 0.0038°
 Venus 0.0064°
 Mars 0.0104°
 Jupiter 0.0057°
 Saturn 0.0100°

(Accuracy of the geocentric longitudes for a date in Ephemeris Time).

So they claim general sub-arcminute accuracy, and that was 16 years ago. For the dramatic developments that have since taken place, see the documentation for DE403 and DE405 at <http://ssd.jpl.nasa.gov/iau-comm4/de403iom/> and <http://ssd.jpl.nasa.gov/iau-comm4/de405iom/>.

> . delta-T I understood that at least the dT is still not fully known for former times (before 1600 CE), so there seems not to be any accurate historical record available (perhaps not yet found). It seems not to be possible to predict an eclipse with more accuracy than a few hours due the > randomness of dT (certainly in times well before 1600 CE).

That sums it up quite nicely. Note, however, that the uncertainty of delta-T only affects the possibility to accurately predict such an eclipse in terms of _local_ time. You can predict it quite precisely in terms of Ephemeris Time (or Dynamic Time). You just don't know the local time at, say, Babylon that corresponds to that instant given in Dynamic Time.

> . wrong position of star How accurately is precession known for 3000 BCE? Are there proper (JPL?) ephemerides that have this info already in (or is this at the same level of accuracy as Delta-T)? So do we also need here an accurate historical record (perhaps not yet found).

The documentation for HORIZONS (http://ssd.jpl.nasa.gov/horizons_doc.html) says: "For the time-span of 1799-Jan-1 to 2202-Jan-1, the official IAU precession model [16] of Lieske is used. As published, this model is valid for only ~200 years on either side of the J2000.0 epoch. This is due to round-off error in the published coefficients and truncation to a 3rd order polynomial in the expressions for the Euler rotation angles. Therefore, outside this interval, the long-term precession and obliquity model [17] of Owen is used to maintain accuracy in the calculation of apparent ("of-date") quantities. This model is a rigorous numerical integration of the equations of motion of the celestial pole using Kinoshita's model for the speed of luni-solar precession."

You'll have to look it up in the literature to see what accuracy is claimed by this model. Looking at Bretagnon/Simon once more, they give formulas for the precession to be applied to the computed coordinates and claim, "These expressions [for the precession in longitude and the obliquity] are precise at the 0.1" level over a period of 6000 years", whatever that may mean for the precessed coordinates themselves...

> . occulting moon/planet and star his is depending on dT AND precession. dT is already unknown, so combining this with precession will not make it more accuracy (so at least a few or more hours errors).

Only the exact instant in local time depends on delta-T, not the fact of an occultation itself. Also note that precession (and thus any

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error in the precession) affects both the coordinates of the star_and_ the moon/planet.

> Please provide your constant feedback.

Enough for today... ;)

Bye, Thomas Thomas Schmidt e-mail: schmidt@hoki.ibp.fhg.de

From : Rob van Gent <R.H.vanGent@ASTRO.UU.NL>

Hi, For more delta-T relations, see the following web page under development:

<http://www.phys.uu.nl/~vgent/astro/deltatime.htm> Regards, R.H. van Gent

World Maps of Eclipse Paths: 2001-2025

From: FRED ESPENAK To: SOLARECLIPSES@AULA.COM eclipse@hydra.carleton.ca Date: Thu, 11 Jul 2002 22:10:02

World Maps of Eclipse Paths: 2001-2025

I have just posted some new World Maps of Eclipse Paths on the NASA Eclipse Home page. These maps cover the period 2001-2025 and are of a much higher scale than the previous world maps which covered 1996-2020.

Below is a brief list which describes each map followed by a link to the map:

World Map of Total Solar Eclipses: 2001-2025 - (Small, 52K GIF, 733x972 pixels)

<http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas3/SE2001-25T-1.GIF>

World Map of Total Solar Eclipses: 2001-2025 - (Large, 104K GIF, 1465x1942 pixels)

<http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas3/SE2001-25T-2.GIF>

World Map of Annular Solar Eclipses: 2001-2025 - (Small, 56K GIF, 733x972 pixels)

<http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas3/SE2001-25A-1.GIF>

World Map of Annular Solar Eclipses: 2001-2025 - (Large, 108K GIF, 1465x1942 pixels)

<http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas3/SE2001-25A-2.GIF>

Links to these maps may now be found on the NASA Eclipse Home page:

<http://sunearth.gsfc.nasa.gov/eclipse/eclipse.html>

An effort was made to keep the file size small for fast transmission while producing maps at relatively high resolution. On the large files, you can quite easily see which countries (or states, provinces, etc.) that an eclipse path crosses.

Please contact me with any comments or corrections. Fred Espenak

From: Onderbeke Julien

Thanks a lot to Mr Espenak for posting the beautiful worldmaps with the paths of the solar eclipses 2001-2025. I guess such maps would also be very interesting for eclipses in the past, maybe as far as delta T is known with great accuracy. But I'm sure this would take a enormous amount of work.

It seems to me that the paths of total and hybrid eclipses, at least within the latitudes of 60° north and south, look like "snakes" moving to the east, while for annular paths they look like snakes moving to the west.

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Is this just an impression or a coincidence or is there a reason?

From: Michael Gill

If you load the following two URLs into your browser...

<http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas3/SE2001-25T-1.GIF>

<http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas3/SE2001-25A-1.GIF>

...You can see the effect that I guess Julien refers to by alternately hitting the 'Back' and 'Forward' buttons on your browser. Eclipses in Saros 134 and 144 contribute mostly to the effect in the annular eclipse map – these eclipse tracks sweep across the globe in a different manner to the TSEs of, say, Saros 139.

<<Is this just an impression or a coincidence or is there a reason?>>

The reason is because of the months that the eclipses occur in. For example, the months of May and October in the 2001-2025 period contain no TSEs but they do have a number of ASEs (periodicities like the Saros and the Metonic Cycle contrive to produce this clustering).

Viewed from the Sun, the Earth has a different orientation depending on the month of the year. Around the June 21st solstice the Earth's Northern Hemisphere is pointed towards the Sun. An eclipse track (like the 2001 TSE) will tend to move in a northeasterly direction from the sunrise point, then after reaching eclipse maximum it will head in a southeasterly direction. (If the eclipse has a high value of gamma, then its path will be projected onto high polar latitudes where unusual tracks can result e.g. May 31st 2003)

Around the December solstice, an eclipse track will head in a southeasterly direction after the sunrise point, reach eclipse maximum and then head to the northeast. For an illustration compare the 2019 ASE (December) with the track of the 2020 ASE (June):

<http://sunearth.gsfc.nasa.gov/eclipse/SEplot/SEplot2001/SE2019Dec26A.gif>

<http://sunearth.gsfc.nasa.gov/eclipse/SEplot/SEplot2001/SE2020Jun21A.gif>

Note how eclipse tracks also differ when they occur around the spring and autumn equinox respectively:

<http://sunearth.gsfc.nasa.gov/eclipse/SEplot/SEplot1951/SE1988Mar18T.gif> (umbra moves to the northeast)

<http://sunearth.gsfc.nasa.gov/eclipse/SEplot/SEplot2001/SE2006Sep22A.gif> (antumbra moves to the southeast)

So, a different time interval decades or centuries in the future, would see the effect Julien referred to disappear or reverse.

A Mercator-projection map with both TSEs and ASEs might resemble a 'Snakes & Ladders' board. One time interval might see ASE tracks as snakes and TSEs as ladders! A different interval could see the reverse! Michael Gill

From Evan Zucker

It probably did, but we can thank Fred for having done it. If you buy Fred's Fifty Year Canon Solar Eclipses, 1986-2035 -- which I strongly recommend for everybody on this list -- you'll find those maps in 20-year intervals for 1901 through 2100.

You can buy the Canon at:

http://www.amazon.com/exec/obidos/ASIN/093334645X/qid=1026492216/sr=1-2/ref=sr_1_2/103-8642890-0199855

[http://skyandtelescope.com/shopatsky/detail.asp?catalog%](http://skyandtelescope.com/shopatsky/detail.asp?catalog%20)

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5Fname=Skypub&chrMainCategory=&chrCategory=&product %
5Fid=4645X&search=YES&chrPriceRange=&chrLevel=&keyword=eclipses&startingrec=6

Amazon charges \$20, and Sky Publishing only \$15. -- EVAN

Let's here it for the eclipse virgins

From: KCStarguy@aol.com To: SOLARECLIP-SES@AULA.COM Date: Fri, 12 Jul 2002 16:11:01

The name eclipse virgins is one I never really heard until my 2001 trip when we had quite a few in the group I was helping to host,

In any case, I wrote what my first eclipse experience was about and what I thought, experienced, what happened etc.

maybe others want to share their "first " (eclipse experiences only please!!!! :) Dr. Eric Flescher (kcstarguy@aol.com) <http://www.ericblackluneclipse.com>

From: Mike Simmons

Here's mine: <http://webpages.charter.net/msimm/Washington/Report.html> Mike Simmons

From: Dribalz@aol.com

Great writing Mike. It gave me goosebumps reading it, and remembering my first eclipse 7/11/91 in La Paz, Baja. Andrew Hans

From: Dave Schmahl

That's a great story about the '79 eclipse. I remember thinking about making that same drive back then, but being too young and broke to go.

If you operated the Zeiss refractor at the Griffith Observatory back in the 70's, then you and I probably crossed paths at least once. That's always been one of my favorite places.

From: Marc Weihrauch

Hi Eric, Sure I made notes after my first TSE, but they're in German. However, your question is a good occasion to translate them into English. I'll post the link when I'm ready :) Have a nice weekend! Marc

From: KCStarguy@aol.com

Thanks Mark. I will pass this along to the rest of the listserve

as well. If you find website on google , it has capabilities of translating the text to another language . Also sometimes I see eclipse astronomy webpages or get email in different languages. Altavista Babelfish is what I use to translate from the language into English. It does also french, spanish and others rather faithfully. You can find it at <http://babelfish.altavista.com/> Hope this is useful to you -all.

From: Rybrks1@cs.com

My first total was Feb 26, 1979. After flying to Winnipeg, then North Dakota, then Montana seeking better weather forecasts from flight service, we rented a car in Billings at midnight the night before.

The car engine seizes at 2am a half mile inside the southern limit. We walk back to Roundup, Montana (now outside the limit again) and the sheriff puts us in his car and heads north. He calls the Montana State Police and they meet us halfway and put us in the State Police Blazer with all our gear. So they lugged us 76 road miles to Lewiston right on centerline a few hours before C1. What a show!

I recall the prominences being awesome...wasn't that the eclipse with the Anteater Prominence? Ray Brooks

From: Dale Ireland

Hi, '79 was my first total also. The Goldendale observatory in eastern Washington took reservations for a hillside area where they laid out a grid of 10ft squares each with a 110v power outlet. Hundreds of people waited in the rain at the bottom of the observatory road for the bus up to the site which didn't start its runs until about 3am for some weird reason. Months earlier I had ordered a Celestron C8 scope to replace my aging Dynascope RV6 but it arrived so late that the dealer from Seattle brought it to Goldendale and gave it to me there, still in boxes unassembled. We hauled it up in the bus and put it together under a tarp in the dark, without losing a single screw!. I had the filter for it to and it provided us with amazing views, especially during totality, in fact that is still the only time I ever viewed totality at such high resolution, I forget which eyepiece was used but the solar disk was just a little bigger than the field of view and the detail was wonderful. I took a few photos through a C-90. The crowd was a real "mixture" including the press, and lots of hippies. Rockin' Roland was just behind us, in case you don't remember him he was rather well known at the time, he had a huge afro hairstyle painted in rainbow stripes and was on almost every major televised sporting event in one of the front rows for a few years

(Continued on page 39)

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(he was quite wealthy). Most of us had glow-in-the-dark eclipse Tee shirts and I remember people facing the Sun just before totality with arms raised yelling "Charge up your shirts, charge up your shirts". The weather cleared just in time for the end of the partial phase and totality and that C-8 gave me years of pleasure after a pretty unique "First Light" for it. I finally came across the old slide tray with the images from that eclipse during our move in march and hope to add them to my web pages soon. Dale

From: KCStarguy@aol.com

Ray, Nice account. Car trouble is no fun. Did the police stay to watch? Wow they took you to Lewiston. That was nice of them.

I flew to Winnipeg with a group from Michigan. For that eclipse and we took the buses out away seeking better skies.

We finally stopped by the highway on a road side where the snow was several feet high beside us. The dirt road is where we set up our scopes.

I remember and still have slides (which I hope to import to website by using a coolscan nikon scanner 1000 that I bought used. This amazing Silverfast Ai software that I have for the scanner is really a great piece of software. Puts all the other scanner software to shame).

I can provide reviews later for anyone who wants by contacting me off the listserve.

The light gold blue coloring on the snow was so amazing before totality. There was one great prominence and I will have to look if it was Anteater Prominence shaped? Can you elaborate on it and what else you remember?

The corona was nice, cameras were freezing up in the cold.

What I remember also that cars that were streaming down the highway with their lights on as the shadow moved in!!! They did not even stop!!! What a shame for them.

I hope to post my full account and slides now that I finally have slide scanner after these many years.

From: Alyn Kelley

The TSE on June 21 of last year was my first. I spent the days before and after the eclipse canoeing down the zambezi with three other people (one of whom was our guide, Englibert). Getting to the place where we were to view totality required overcoming several obstacles -- getting a late start on our drive to the river due to the guide forgetting our park permit, a flat tire on the escarpment that meant we had to abandon our canoe trailer and strap the canoes to the roof of our truck, waking up on the morning of the eclipse only to find that they had closed the dam and the zambezi was dry. Portaging steel canoes through croc- and hippo- infested waters was quite difficult! Then canoeing for our lives towards our TSE viewing place, against a stiff headwind.

After overcoming these obstacles we were thrilled to be able to see the eclipse from the shore of the river, virtually alone; only the birds, hippos, crocs and elephants around us.

here is the text of my writeup from the day of the eclipse:

At the last second before totality, much faster than I was prepared for, the shadow of the moon raced over us and the last crescent of the sun shrank and was gone. In that last moment, a crater on the horizon of the moon was the last thing to let the sun's light through; it only lasted a few seconds, and then suddenly boom, you're standing in the dark, with a red sunset-like horizon, and this incredible, improbable jewel in the sky overhead... There were only four of us there, but we made enough noise to scare the wildlife, I'm sure. I can't even remember what people were saying; I remember yelling out something about how it looked like a sunflower. When the sun went out, our guide Englibert turned around and started yelling in Ndebele (I assume) to someone behind us on the farther shore; I wonder if he thought the eclipse was

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over? He told me later he was asking the other person "hey, did you see the eclipse?" But I couldn't bear that this beautiful thing was in the sky overhead and he was missing it, so I grabbed his shoulders and hauled him around and yelled, "LOOK AT IT!" I tried to give him my binoculars (you can look at totality without special filters) but we were both so out of our minds that he couldn't get them focused, and I tried to pick up my camera and then realized how foolish that was... there was no way I could operate anything with buttons the way I was feeling. So I just held up my binoculars again and tried to keep my hand from shaking so I could take in every second that was left.

My voice was shaking, my hands were shaking, tears were streaming down my face, I was absolutely overcome with awe. No pictures, no knowledge, no hearing from other eclipse-chasers prepared me for the intensity of emotion at this spectacle. I did not feel small, or afraid, even though I could imagine feeling that way having the sun go out over my head; instead I felt huge. In moments like this (a strange phrase, considering there will never be another moment like it in my life) I'm reminded of how incredible and enormous and glorious and gorgeous is the world, the universe we live in. Every second was a year, every minute was a nanosecond. I know in my mind that we watched the totality for something like 3:35 minutes, but my body has absolutely no recollection of that length of time.

There were stars and planets in the sky. The corona shimmered and danced. The breezes were chilly. The animals and birds were settling in for a very short night. My eyes were bigger than my head, than my whole body.

Before we knew it, it was over. It felt like 3 seconds and 3 years. Suddenly a gleam of light at the bottom left of the sun, and everyone yelled, "look away!, look away!", and another bailey's bead occurred.

I turned around to keep myself from looking at the sun, just in time to see the moon's shadow suddenly race away, and the light rocketed from dark to bright before my eyes. It was so strange to see how little sun you actually need to have enough light to see by.

Then Dave shouted, "Shadow Bands!" There behind us where stripes of shadow, maybe a foot across, blurring towards us across the sand. There are some debates about what causes these; some folks say it's the light diffracting around the edge of the moon and causing a pattern large enough to project on the surface of the earth; some say it's the light from the edge of the moon being refracted by the earth's atmosphere. I personally think it's the former; I think someone in space should look for shadow bands at the next eclipse to see if I'm right. :)

The feeling I had at the end of the eclipse is hard to describe... I went into shock a little bit and had a hard time functioning for several minutes. It was the biggest high and the biggest low I think I have ever experienced, both at the same time. Here was this tremendous, improbable, breathtaking, consuming spectacle that I've wanted to see my whole life, on a trip I've been planning for 2 years. And I saw it! We overcame obstacle after obstacle, spending every ounce of our energy to be exactly where we wanted to be, dodging ornery hippos etc., and there were no clouds and we were alone, just like I wanted to be. We had earned every second of that totality; I found out later we had gained something like a minute and a half of totality by canoeing as far as we had.

And now it was over. That incredible moment of eternity was over, and even if I see more eclipses and have more wonderful adventures, which I'm sure I will, there will never be another moment like that one, and every minute that passed after it was over was a minute that put itself between me and that experience, blurring it forever. It hurt that time was passing; I wanted to stay in that 3.35 minutes as long as possible. It's hard, in that feeling of loss, to remember that part of why it's so special is because it's so fleeting.

As we were getting back into the canoes, our guide Englbert said, "Now I believe the scientists. They can see so far into the future that they can tell me what minute something like this is going to happen! They must be close to God."

here is the link to my complete trip report (much longer than I'm sure most of you want to read): <http://www.well.com/~alyn/africa2001/index.htm> Alyn

From: Glenn Schneider

Do you mean the one seen at the ~ "7 o'clock" position in the left image on: <http://nicmosis.as.arizona.edu:8000/>

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ECLIPSE_WEB/ECLIPSE_79/ECLIPSE_79.html ?

That truly was a glorious eclipse - one of the darkest I can remember, and one for which the approach of the lunar shadow was most distinct and highest contrast. Glenn Schneider <http://nicmosis.as.arizona.edu:8000>

From: Rybrks1@cs.com

Alyn Kelley's account was great! I also suffered the post-eclipse blues for about ten days.

Upcoming Transits of Venus and Mercury

From: Vic & Jen Winter

Evan, I'm glad you brought it up. I'm also glad you voiced this opinion about Israel.

We've been working with Eli Maor on the topic for a number of years. Naturally, Eli will want to visit his homeland of Israel for the Transit and has a beautiful site selected in the Negev Desert where the landscape and visibility are sure to be excellent. There are also a lot of desirable tourist destinations nearby on the Red Sea which that tour would visit.

Naturally it is not the ideal time to make a public announcement of a tour to Israel, or to truly make a decision about how safe we feel the destination will be in two years. Eli has family in Israel and travels there himself regularly without incident, but public opinion is usually based on headlines. With this in mind, we have decided to offer TWO choices. One will go to the Negev desert in Israel with Eli unless he himself feels it isn't safe; and our second offering will visit Egypt. However, those programs are some time away in an area where things change quickly. I, myself am focusing a bit more heavily on the 2002 and 2003 eclipses first.

*I think we'll be entitling the two transit location choices 'Hot' and 'Hotter'. Clear Skies, Jen Winter - Owner (913) 432-4636

From: Vic & Jen Winter

Chistophe, Eli's book spoke about observing in Tel Aviv. However, he has noted in person that observing from a city such as Tel Aviv or Jerusalem are perhaps not such a good idea. (And not only for security reasons) Those cities tend to have significant air quality issues in the heat of the summer. He admits that the use of Tel Aviv in his book was a literary aid for the impact to envision witnessing this epic event in the town of his boyhood.

I believe that we can all agree that those destinations of Egypt, Israel, India and such are all significantly hot. This is unfortunately a side-effect of the arid, desert environment that encourages clear skies. Air quality, however, can become an issue in environments where pollutants from large cities, smog, ozone or inversion layers can affect seeing. You can find the Wise Observatory in the town of Mitzpe Ramon in the Israeli Negev Desert and their website at <http://wise-obs.tau.ac.il/index.html> shows clear night percentages with no clouds in June at 89%. They are also kind enough to have a weather status page posted for us to watch for further details about that region.

From: Evan Zucker

I'm curious why Egypt and Iran are the destinations for at least two transit tours but I have yet to hear of a tour to view the transit from Israel. I would imagine that the weather and visibility in Israel will be nearly as good as in nearby countries -- I don't think the Negev Desert or Eilat get a lot of clouds in June -- and I would expect the logistics to be a lot easier.

Are people afraid to go there? I can't speak for others, but I know I'd like to spend my travel dollars supporting the travel industry of the only democracy in the Middle East.

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I'm not trying to start a political discussion; I'm just surprised that people wouldn't like to take advantage of this opportunity to combine a view of the transit with a chance to see the famous attractions in Israel. Evan H. Zucker San Diego, California

From: Mike Simmons

>I'm curious why Egypt and Iran are the destinations for at least two transit tours but I have yet to hear of a tour to view the transit from Israel. I would imagine that the weather and visibility in Israel will be nearly as good as in nearby countries -- I don't think the Negev Desert or Eilat get a lot of clouds in June -- and I would expect the logistics to be a lot easier.

What is the weather like in June in the Negev Desert or Eilat? Isn't it unbearably hot that time of year? Perhaps there are other places in Israel that would be more comfortable. Remember that, unlike during an eclipse, you're going to be out in the Sun all day.

Given an observing location that's suitable for humans Israel should be a good location as well. The transit will begin a little less than three hours after sunrise but the Sun will be higher for the end of the transit. At mid-transit the Sun will be at an altitude of about 70 degrees, just over an hour before the Sun transits the meridian at an altitude of about 80 degrees (all depending on just where you are in Israel, of course). I don't see any reason that the logistics would be any easier there than in most of the other countries in the region, though. Rather, will increased security measures interfere with travel plans in Israel? I suppose it's hard to predict this far ahead. I expect it will be taken into account with any tour there, though. Mike Simmons

From: ccm1t

At least, Jerusalem is the place, where Pr Maor chose to locate the beginning of his excellent book "Venus in transit" ... Christophe

From: Mike Simmons

> I believe that we can all agree that those destinations of Egypt, Israel, India and such are all significantly hot. This is unfortunately a side-effect of the arid, desert environment that encourages clear skies.

I can't speak for all the countries in the area but I know that Iran has considerable altitude variation -- from sea level to 18,000+ feet -- and climates from desert to tropical forest. There are several ski areas within an hour's drive of Tehran and there are high mountains in many areas of the deserts as well. I expect there will also be mountains in some other countries in the region that will alleviate the heat without risking clouds. But I don't know the geography of the Arabian Peninsula -- aren't there any mountain ranges in the region? Mike Simmons

From: 76630,2206

What about the Greek Islands? I am sure that we can have a very nice breakfast and lunch at a restaurant with a view with our telescopes (with H-alpha filters) and other equipment attached.

It will be more pleasant and safer. The Mediterranean should stabilise the atmosphere. Any thoughts? --Robert B Slobins

From: FRED ESPENAK

As a matter of fact, I'm organizing an expedition to the Greek Isles for the Transit of Venus. I'll provide more details as they become available. - Fred Espenak

From: Daniel Fischer

The Iranians (i.e. the astronomical society of Esfahan which is one of the most active in the country) have already de-

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cided on the location of their major international Venus transit camp (to be preceded by a conference). To quote from a recent invitation to participants of an earlier astronomy gathering in Esfahan in 2000 in which I participated:

>>1. Two-day workshop in Esfahan (themes of the articles: Solar System, internal planets, Venus, and discovery the new planets; about the last issue we are exchanging viewpoints with the university professors in Iran)

2. Observing the Venus transit in Zayandeh-rud Village in 100 km west of Esfahan

3. Visiting Esfahan, Shiraz, Mashhad, Tabriz, Ramsar, Rasht and Tehran

4. Presentation for public in the above-mentioned cities<<

The 2000 trip was outstanding - see e.g. <http://www.ykchia.com/iran2000.htm> or <http://www.swisr.org/esfahan.html> or <http://olympus.umh.ac.be/photoiran.htm> for reports and pictures; the "official" report by the organizer is at http://www.geocities.com/adib_society/gathering.htm - and so Iran will be my number one choice, followed closely by Jordan, Turkey, Greece and Bulgaria. All depending on certain political developments in the area, of course ... Daniel

From: ccmlt

Hi all, This is funny to read such a question ! In fact, 2 years ago, when I began to work on the 2004 transit expedition, I thought going to middle east was the solution ... Then after a few month searching about weather probabilities, I convinced myself that the area west of Black sea to Athen was one of the best solution for european observers : Venus should be 25 to 28° high at first contact and weather should be as good as : 70% (Bucarest) to 90% (Athen). But, speaking about Greece, mainland should be a better choice than small islands, allowing last minute mobility in case of cloud cover. Another advantage (for european people sorry ;-)) : you could bring more and more astronomical gear if you go by car than if you go by plane ; Athen is no more than 2 days of driving from almost all western Europa. That is probably where we will go on that wonderfull day ... Is there other "transits chasers" working on similar expedition ? Sincerely, Christophe

From: 76630,2206

Christophe and all: Before we start talking about a particular site, maybe someone ought to provide weather information for the relevant locations...including LOCAL conditions and variations!

70% good weather in Bucharest? I was in Bucharest for the 1999 eclipse and lucky that I was not in the center of town, clouded out of totality.

Unless the politics change, I'd go to Greece or Turkey. Not only for the transit, but also for the food. cheers/Robert B Slobins

From: Mike Simmons

Well, Adib Astronomical Society (the society you mention in Esfahan) isn't quite all of "The Iranians" nor are their plans the only international ones, though with 1450 members(!) they're almost certainly the largest group in the country! I was at Adib's center in Esfahan two months ago while traveling around Iran and wrote one article in a series about their efforts. I was with friends from Nojum (Astronomy) Magazine who organize and support activities among the 60 amateur clubs in Iran and participate in the Iranian Astronomical Society through the society's new Committee on Amateur Astronomy. With Nojum making arrangements, I also met with (and gave presentations to) amateurs and students at Birunye Observatory at the University of Shiraz (the largest active telescope in Iran), Omar Khayyam Science Center in Neishabour (near Mashad; they're building a huge planetarium), Sa'adat-Shahr (where the town has built their own observatory) and Tehran (three universities and an amateur workshop organized by Nojum). I'll again be traveling with them in 2004 as well as nature guides and, I hope, an archaeologist friend from the National Museum of Iran who works at Persepolis, Pasargard and other sites and who has accompanied us on our two visits to Iran so far. Nojum is again planning a two-day conference in Tehran in association with the transit. However, we will probably observe the transit from

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farther south. In May we observed and photographed the planetary grouping from one of the palaces of Pasargard, the first capitol of Persia (2500 years old), through special arrangements and we hope to do the same thing in 2004. I don't know how large Adib's group will be, though. Ours will be kept quite small, perhaps 30 people (plus Iranians).

The articles on this four week trip were written for Astronomy.com though only three have been posted so far (beginning at <http://www.astronomy.com/Content/Dynamic/Articles/000/000/000/859zfwo.asp>). The rest are supposed to go online very soon. My report on our 1999 eclipse trip to Iran is at <http://webpages.charter.net/msimm/Iran/Eclipse99/Report.html>. I'll probably be back in 2003, maybe for the Mercury transit. Mike Simmons

From: Assoc Prof J R Huddle

I made my decision to visit Egypt for the Venus transit on the basis of "salability." We thought a Nile Cruise in Egypt would be the easiest to sell, because the weather is favorable, the circumstances of the transit are good ('tho perhaps not as good as Iran) the price is right, Egypt is fairly safe for Americans right now, and has lots of fascinating things to see, many of which are famous. To see the itinerary for our Nile cruise (4 - 13 June 2004, US\$ 3595 per person, double occupancy from the East Coast) please visit <http://www.innovationsintravel.com/>.

I have been to Israel, Jordan, Syria and Lebanon in 1966, and my mother and father went back in the late 1980's. It is beautiful country, with many interesting things to see, as Evan points out. My favorite memories are of Petra and seeing archaeological digs in progress. Dad and I both recall the food being good. I'd love to go back, but the current political situation in the region makes me reluctant to take a large group of Americans at this time: A large group is more likely to draw attention from those with violent intentions. A smaller group may draw much less attention. In his book, "June 8, 2004--Venus in Transit," Eli Maor mentions his desire to observe the transit from Israel; if you go, maybe you'll run into him there! Jim Huddle

From: Rybrks1@cs.com

All of the recent email on the June 8 2004 transit by Venus and where to view it remind me of the 1994 TSE when Venus was only 5 degrees from the Sun. What excites me even more than the transit itself are the opportunities to see Venus as a full circle of light as the sunlight refracts through the upper cloud layers around the backside of the planet in the days prior to transit and following transit.

On March 23 2001, I observed Venus right after sunset at various powers of magnification up to 200x and was able to see 360 degrees around the planet limb. The Sun was 7.6 degrees below the horizon when Venus became lost in clouds about 4 degrees above the horizon. The separation between Venus and the Sun was 12 degrees and seeing conditions were rather poor. I am certain in excellent desert weather conditions with less separation (meaning less refraction angle) there will be some spectacular views of Venus.

I mention this with respect to selecting an optimal site latitude. The best latitude for post sunset views prior to June 8 is about 15 degrees north. That allows minimum sky brightness for maximum Venus altitude above the horizon. (That is lowest Sun for a highest Venus) The best latitude for pre-sunrise views after June 8 is about 15 degrees south. And a latitude near the Equator would be a decent compromise for both views.

I consider this subject on topic since a Venus transit is technically a 0.03 magnitude annular eclipse of the Sun. I hope Patrick agrees since I have considerations for the group regarding the comparison of a Venus saros to a conventional solar eclipse saros which I would like to forward soon to the SEML. Sincerely, Ray Brooks

From : Gessner <gessner@easynet.fr> To : <eclipse@hydra.carleton.ca>

Thank you FRED ESPENAK for the maps of

Two central solar and two total lunar eclipses in 2003:

2003 May 16: Total Lunar Eclipse

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2003 May 31: Annular Solar Eclipse

2003 Nov 09: Total Lunar Eclipse

2003 Nov 23: Total Solar Eclipse

I dare ask a question concerning the Mercury-Transit, as this could be seen as a tiny, tiny fraction of an eclipse.

May 7, 2003, we'll see a Transit of Mercury in Europe. Could any of the specialists on our list please confirm that

- this is indeed the first Transit of Mercury visible in Europe since May 9, 1970,
- we'll have another one in 2006,
- thereafter we'll have to wait until 2032 ?

Thank you, Nicolas Gessner

From: Alcovedbase@aol.com

Aloha Everyone! This might seem a little belated reply, but I am still catching up with my zillions of emails after coming back from the AAVSO's meeting on the Big Island of Hawai'i.

Long before seeing Fred's maps for these transits, I had already made up my mind: I will definitely be in Turkey both in 2003 and 2004 (in Hawai'i in 2012). It's not only for the impeccable Mediterranean climate or the food, but because it is the land of the most hospitable people (yeah, astronomers included) in the whole world (don't believe blindly everything you hear or read). I haven't heard about any specific tour yet, but I am sure Turkish amateurs as well as professional astronomers would be more than willing to help you organize your own personal tour. One such resource for information is the Middle East Technical University's Amateur Astronomy Group (<http://newton.physics.metu.edu.tr/~aat/index.html>) which was previously mentioned in this list. For more resources, you can check out my Turkish Astronomical Links page at <http://members.aol.com/astroalcove/tkeyastro.html>.

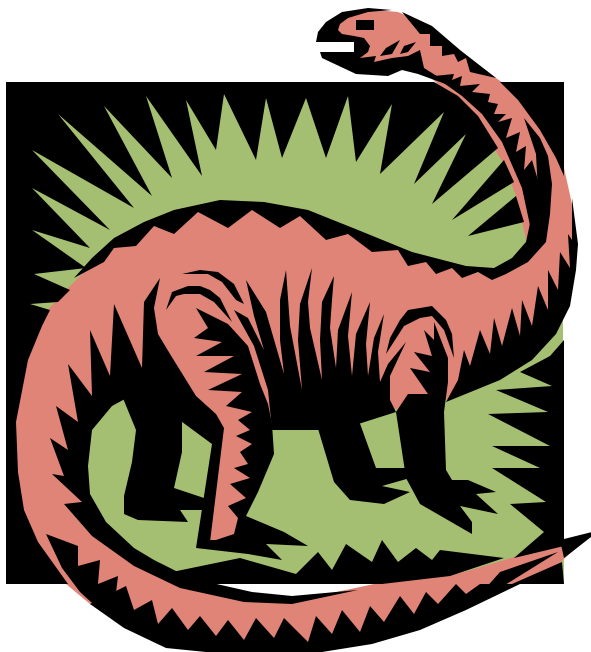
Oh, by the way, did I mention that originally I am from Turkey? Happy Chasing (umbra, transits, comets, variable stars, or whatever) Haldun I. Menali Amateur Astronomer / Boston, MA ALCOVE Database <http://members.aol.com/astroalcove/index.html>

1979 Feb 26

From: Rybrks1@cs.com To: KCStarguy@aol.com SOLARECLIPSES@AULA.COM Date: Tue, 16 Jul 2002 17:22:56

Dear Eric; Good story. I remember reading some accounts about your group in the succeeding months after Feb 26.

In Montana we had a very thin layer at 30,000 which acted as a wonderful medium to see the edge of the shadow come over us. None of the other 6 TSE's I have seen were as good to show the shadow enter and exit. Ray Brooks



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Analogies

From : Bob Morris <morris@sce.carleton.ca> To : Patrick Poitevin Date : Thu, 18 Jul 2002 19:01:23 -0400 (EDT)

Patrick: The following has an eclipse portion. It is only really funny, though, in the context of the others. LRM

>Analogies & Metaphors found in American High School Essays.....

>Her face was a perfect oval, like a circle that had its two other sides gently compressed by a Thigh Master. Sue Lin Chong, Washington

>

>His thoughts tumbled in his head, making and breaking alliances like underpants in a dryer without Cling Free. Chuck Smith, Woodbridge

>

>He spoke with the wisdom that can only come from experience, like a guy who went blind because he looked at a solar eclipse without one of those boxes with a pinhole in it and now goes around the country speaking at high schools about the dangers of looking at a solar eclipse without one of those boxes with a pinhole in it. Joseph Romm, Washington

>

>She caught your eye like one of those pointy hook latches that used to dangle from screen doors and would fly up whenever you banged the door open again. Rich Murphy, Fairfax Station

>

>The little boat gently drifted across the pond exactly the way a bowling ball wouldn't. Russell Beland, Springfield

>

>McBride fell 12 stories, hitting the pavement like a Hefty bag filled with vegetable soup. Paul Sabourin, Silver Spring

>

>Bob was as perplexed as a hacker who means to access T:flw.quid55328.com\aaakk/ch@ung but gets T:\flw.quidaaakk/ch@ung by mistake. Ken Krattenmaker, Landover Hills

>

>Her vocabulary was as bad as, like, whatever. Unknown

>

>The hailstones leaped from the pavement, just like maggots when you fry them in hot grease. Gary F. Hevel, Silver Spring

>

>Long separated by cruel fate, the star-crossed lovers raced across the grassy field toward each other like two freight trains, one having left Cleveland at 6:36 p.m. travelling at 55 mph, the other from Topeka at 4:19 p.m. at a speed of 35 mph. Jennifer Hart, Arlington

>

>The politician was gone but unnoticed, like the period after the Dr. on a Dr Pepper can. Wayne Goode, Madison,AL

>

>They lived in a typical suburban neighborhood with picket fences that resembled Nancy Kerrigan's teeth. Paul Kocak, Syracuse NY

>

>John and Mary had never met. They were like two hummingbirds who had also never met. Russell Beland, Springfield (my favourite - SWP)

>

>He fell for her like his heart was a mob informant and she was the East River. Brian Broadus, Charlottesville

>

>Even in his last years, Grandpappy had a mind like a steel trap, only one that had been left out so long, it had rusted shut. Sandra Hull, Arlington

>

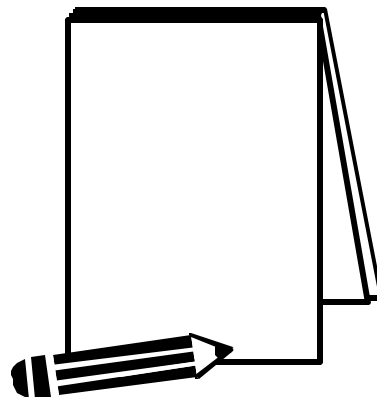
>Shots rang out, as shots are wont to do. Jerry Pannullo, Kensington

>

>The plan was simple, like my brother-in-law Phil. But unlike Phil, this plan just might work. Malcolm Fleschner, Arlington

SETalk

- >
>"Oh, Jason, take me!" she panted, her breasts heaving like a college freshman on \$1-a-beer night. Bonnie Speary Devore, Gaithersburg
- >
>He was as lame as a duck. Not the metaphorical lame duck, either, but a real duck that was actually lame. Maybe from stepping on a land mine or something. John Kammer, Herndon
- >
>Her artistic sense was exquisitely refined, like someone who can tell butter from I Can't Believe It's Not Butter. Barbara Collier, Garrett Park
- >
>She had a deep, throaty, genuine laugh, like that sound a dog makes just before it throws up. Susan Reese, Arlington
- >
>It came down the stairs looking very much like something no one had ever seen before. Marian Carlsson, Lexington
- >
>The ballerina rose gracefully en pointe and extended one slender leg behind her, like a dog at a fire hydrant. Jennifer Hart, Arlington
- >
>The revelation that his marriage of 30 years had disintegrated because of his wife's infidelity came as a rude shock, like a surcharge at a formerly surcharge-free ATM. Paul J. Kocak, Syracuse
- >
>The dandelion swayed in the gentle breeze like an oscillating electric fan set on medium. Unknown
- >
>He was deeply in love. When she spoke, he thought he heard bells, as if she were a garbage truck backing up. Susan Reese, Arlington
- >
>She was as easy as the "TV Guide" crossword. Tom Witte, Gaithersburg
- >
>Her eyes were like limpid pools, only they had forgotten to put in any pH cleanser. Chuck Smith, Woodbridge
- >
>She grew on him like she was a colony of E. coli and he was room-temperature Canadian beef. Brian Broadus, Charlottesville
- >
>She walked into my office like a centipede with 98 missing legs. Jonathan Paul, Garrett Park
- >
>Her voice had that tense, grating quality, like a first-generation thermal paper fax machine that needed a band tightened. Sue Lin Chong, Washington



SETalk

Eclipse Glasses - De'ja Vu

From: Glenn Schneider To: SOLARECLIPSES@AULA.COM Date: Tue, 16 Jul 2002 20:42:12

Mark wrote: Professional and amateur astronomers have been putting solar filters on the fronts of telescopes, binoculars and cameras for years.

I am nearsighted (about -2.2 diopters) and have been since I was in my early teens. In the early/mid 1970's I started making what I called "real" prescription sunglasses to view the partial phases of solar eclipses. Then, my vision was changing (worsening) on pretty rapid timescales and every year I needed new glasses (NOT because of my eclipse viewing I hasten to add - quite hereditary in my family). So, I would take the old lenses out and, as I had access to a bell-jar vacuum system, I would evaporatively coat both sides with Aluminum (melted in a titanium crucible in the chamber) to an optical depth of about [2.5] dex on both sides. I would then apply a MgF₂ overcoat so the aluminum would not scratch off. And, Voila prescription "sun" glasses. They were PERFECT for viewing partial eclipses. Of course they were absolutely of no use for anything else, unless you happen to like staring into the filaments of clear incandescent 100W lamps. What I hadn't appreciated then is how "cool" the steel-metallic reflective look of those solar shades were. Someone else picked up on that and with much less optical depth made a fortune. Sigh... Glenn Schneider

From: Crocker, Tony (FSA)

Maybe the Aussies will "get it" after their great eclipse decade of 2028, 2030, 2037 and 2038. The 2030 path is similar to this year's, but the other 3 cross the entire country from west coast to east coast. Hopefully they will do better in Sydney in 2028 than in Melbourne in 1976.

From: Geoff

Rob (or anyone else in Australia)-

Would you be able to tell us anything about purchasing eclipse glasses?
Apart from the fact they are fun... I would very much like to observe the eclipse through glasses (as well as through my cameras). From what I can tell, the only place which makes these glasses is Rainbow Symphony, and no place sells them in Australia.

Does anyone know if Astronomy supply / telescope shops in Australia plan to order some in from Rainbow Symphony? The minimum order of 25 is a lot for just 1 or 2 people to use. --Geoff

From: Kidinvs@aol.com

For those in Australia.... in regard to eclipse glasses... I would suggest that if you can order as few as 25 from Rainbow Symphony, then do it. I have seen 7 total eclipses, and have never found a single spot that was not in need of glasses. You could easily get a few bucks each, and end up with free glasses for yourself. As far as the quality, Mark Margolis is, as far as I am concerned, the best guy out there, makes a quality product, cares about his his customers, and I think that he is even a sponsor of this SEML. Rick Brown www.eclipsesafaris.com

From: Mark

Geoff, We will have distributors in Australia where you can purchase the quantity you need. You may want to contact us off the group. Of course if anyone in the group needs to know we are happy to pass on the information. Thanks

Best.. Mark Rainbow Symphony, Inc. <http://www.rainbowsymphony.com> Ph# 818-708-8400 Fax# 818-708-8470 Quality Paper Eyewear and Specialty Optics

From: Janita V Hill

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Would you be able to tell us anything about purchasing eclipse glasses? the only place which makes these glasses is Rainbow Symphony, and no place sells them in Australia.

Dear all, I did not come across any company making Eclipse Shades in Australia. Months ago I ordered a large batch of eclipse glasses from Rainbow Symphony to be sold by the Astronomical Society of South Australia Inc. This was partly as a fund raiser, and partly because I believe it is one of our roles to be guiding folk on what they can and cannot do, and should have the basic equipment available. (These shades are personalised with the ASSA's logo.) Fraser Farrell and I have designed a two page brochure about the December 4th eclipse to be given out with all the shades the Society are selling. It is a simple explanation suitable for the general public. It has the eclipse path map, times, approximate distances to centre line, and details of what is safe and what is unsafe to use to view the event. I have included cartoons of pinhole projection and a schematic diagram of what the eclipse will look like at various stages. There is a list of web sites for further information. We have recommended naked eye viewing during totality, with explanations of what this is and how short it will be. I am pleased that even with all that, we have managed to keep it to two pages of A4. The information we gleaned from various sites and books such as Fred Espenak's and Brian Brewer's. I have full confidence in the information found there.

It has buoyed my spirits somewhat to read all your recent messages on this topic. Thank you one and all. I have been quite disheartened with the negative articles and attitudes that are still being published in the media and elsewhere. I still see some battles ahead, closer to the time, which I dread. Nevertheless, as distasteful as I see these future stoushes, I believe we must persist in giving ordinary people the opportunity to watch this spectacular sight.

Because the Society serves an educational role as well, I have stated that the brochure may be copied in full for free by anyone. This will probably put a hole in my fundraising effort, but we simply cannot deny the public access to correct information. The brochure will be put up in PDF form on the Society's webpage and Fraser Farrell's pages soon. It may be there already. cheers for now, Janita Hill Editor of the Bulletin of The Astronomical Society of South Australia, Inc. janita@picknowl.com.au Fraser's web site is: astronomy.trilobytes.com.au and the Society may be found on: www.assa.org.au/observing/eclipse2002

From: rcurkpatrick@ceduna.sa.gov.au

Geoff The official (South Australian) government statement does not mean that eclipse shades are now "illegal", so there will be plenty around. I can't recommend any particular supplier, but I'm sure that someone will help you via the SEML. Regards Rob

From: Assoc Prof J R Huddle

Geoff wrote, "The minimum order of 25 is a lot for just 1 or 2 people to use." You can make friends very easily by giving the extra eclipse glasses away to local people.

I haven't checked Mark's prices lately, but 25 pair of eclipse glasses cost a tiny fraction of the cost of a trip to observe an eclipse. Still, the cost of a pair is often much more than the local people we meet in our travels can afford, so the recipients are grateful. Australia is a reasonably wealth country, so the local people are more likely able to afford eclipse glasses than people in, say, Africa, for instance, but the principle still holds good, and there are poor people everywhere.

There are other reasons to bring extra eclipse glasses with you. On my way to Turkey in 1999, I had to spend a couple hours in the airport in Frankfurt. I noticed that the two ladies at the check-in desk were not busy, so I went over to chat them up. I gave them each a pair of Mark's fine eclipse shades. Some minutes later, as I was sitting and reading, one of the women came up to me and asked to see my tickets. She looked at them briefly, then excused herself and disappeared with my tickets. "Uh-oh," I said to myself, "I'm in deep kimchee, now!" As the minutes passed, I grew more worried, until she returned and told me, "We've found a seat for you in Business Class." Jim Huddle

From: Fraser Farrell

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You can get this brochure as an 891kB PDF from: <http://astronomy.trilobytes.com.au/2002/eclipse-brochure.pdf>

I am pleased to read your responses to the "safety advice" being promoted by our SA Health Dept. Who are quite clearly terrified of lawyers being unleashed upon them by People Too Stupid To Read & Follow Instructions.

There may indeed be no Guaranteed Safe Way to view an eclipse. After all an evil bird might peck holes in my telescope's Baader film while I'm watching the partial phases.

But to put it in context, there is also no Guaranteed Safe Way for me to travel from my home to the Health Dept's head office -- to demonstrate to them _personally_ the several safe ways to view the sun. There's a lot of road accident black spots between me and them! And their main entrance gets rather slippery when it rains...

I think they have blown away much of their credibility with this "safety advice" statement. Consequently, when they later dispense Sensible Advice to eclipse tourists about sunburn, heat stress, snakes etc they will not be believed. And that is a scenario which could indeed result in lawyers being set upon them, after eclipse tourists get hurt. How ironic.

Incidentally, the current South Australian Minister for Health is: The Hon Lea Stevens MP lea.stevens@dhs.sa.gov.au

If you write to her about this issue I suggest that you use easy words. I've met her a few times at business functions, and she doesn't seem to be overly bright.... cheers,

From: Kidinvs@aol.com

Eclipse shades have a way of creating very odd stories. I was the catalyst that created riots in the streets on the road approaching Lusaka from the south. I always purchase a few thousand glasses from Rainbow Symphony, and take them on my tours. Usually, I can sell them to the locals, where they are desperately needed, but in the case of Zimbabwe, NO ONE had glasses, and NO ONE had money!!! On the road we traveled from Victoria Falls to Landless Corners in Zambia, we made a few stops with the group for drinks, and a few. I would hand out about 50 pairs to the locals who gathered around us, knowing we would have glasses. As we approached Lusaka, and as the sun was setting, and dusk was upon us, I began to throw hundreds of glasses to people that would gather in the road as we passed. As we looked behind us, it was absolute mad chaos. This happened a few times, until a car finally raced up to our van, and begged us to stop tossing glasses out the window, because people were literally fighting each other over the shades!!! ...one of the memorable moments of that last trip!!!! Rick Brown www.eclipsesafaris.com

From: Mike Simmons

Mark had 800 pairs of glasses printed in Farsi (Persian) that I took with me to Iran for the 1999 eclipse to give away along our route. I could have given away millions! It was much appreciated and a good thing to do in third world countries. Mike Simmons

From: Mike Simmons

I would like to second Rick's feelings about Mark Margolis. A great guy always helping out and a class act all the way. Mike Simmons

From: K. Wiersema

Hallo, We (=Patrick Weltevrede and myself) had a funny experience handing out eclipse shades as well. While we were travelling towards the centerline of the eclipse (2001), our truck got stuck in the mud, just a couple of hours before first contact. Panic! We did not manage to get out of the mud by ourselves and needed some help. We went to a small village nearby for help. One man helped us out: he used two of his strongest bulls to pull at the front of the truck. These animals are so incredibly strong, they pulled us out. We were very grateful and handed out some eclipse shades. We had the impression that the people thought that looking through the shades would produce some kind of spectacular event, at any given time. So, we had to explain at what time they had to look at the sun, and that looking at the sun without eclipse-

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shades could damage your eyes. While walking away, one man rushed after us, he was quite worried. It took a while to find out what he was trying to say: "What if my chickens look at the sun? Do you have eclipse shades for my chickens?" He was worried, since blind chickens are no good. This was not an easy question to answer..... Greetings, Klaas Wiersema

By the way: We were at our observing-site 2 hours before first contact and had the totality of our dreams. We were about 90 km away from Lusaka, close to the Lower Zambezi National Park.

From: Fraser Farrell

Out of curiosity, I did examine some "wine cooler bags" earlier this month for their possible use as solar filters. These bags, made of aluminised Mylar, are used here to contain a few litres of wine inside cardboard boxes for retail sale. Therefore they are readily available in Australia from any liquor retailer. And as a bonus you also get a nice Shiraz or sparkling white as well....

I discovered that if you are very careful with your scissors then some good solar filter material can indeed be scavenged from a wine cooler bag. But all of the ten specimens I examined contained some pinholes and/or creases where the aluminium was missing. And a couple had patches so thin that the sunlit ground could be seen through them!

I would presume all of these flaws occurred during their manufacture. And I don't know if my specimens were typical, or just a bad batch.

So for the sake of public safety, I'm going to continue to advise that wine cooler bags are UNSAFE for solar viewing.

As for my old Space Blanket, it may indeed have begun life as an offcut from Glenn's Chinese tailor. But nowadays it's so badly scratched and crinkled after 20 years of camping that I wouldn't dare look at the sun through it! cheers,

From: Dale Ireland

The position of the Australian Ophthalmology Assoc is starting to make sense now.... :) Dale

From: Patrick Poitevin

Mike Simmons wrote: I would like to second Rick's feelings about Mark Margolis. A great guy always helping out and a class act all the way.

and Eric Brown wrote: ... , and I think that he is even a sponsor of this SEML.

Indeed Mark Margolis supports the SEML since the beginning of its existence (December 10, 1997). Rainbow Symphony is the sole sponsor of the SEML. A big thank you to Mark Margolis. Best regards, Patrick

From: Dale Ireland

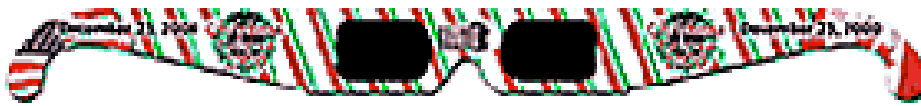
I agree, rainbow S. does a great job and I have never been to an eclipse where I could not give away 50 or 100 eclipse glasses without even trying. I gave away a lot of them to my patients in the days before the last partial here in Seattle and it was only a few percent covered. People love those things..... especially when they are free. Dale

From: Mark

This makes the case for having the right materials and products available for safe solar viewing. We hear the fears and chatter before every eclipse. Actually this is a good thing because all the information gets out there and people can sort it out for themselves. Like the man says, "either you believe me or you don't". At the end of the day everyone within proximity wants to take a look. People do not sustain injury by using the proper filters. The risk comes in by using the wrong filter materials or nothing at all! As a point of information, in addition to the "CE" certifications, our materials have been

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tested most recently in Australia at the University of NSW in accordance with AS/NZS 1338.2 & 1338.3 This is the standard for welders glasses. Like many countries we have encountered, a standard for solar filters does not exist so they use the closest thing...typically welders glass. Although the Eclipse Shades are not recommended for welding purposes they do meet all the UV, IR and visible light transmission requirements for safe solar viewing. The test were ordered by our distributor of Eclipse Shades in Australia, David Finlay at Starfield Scientific & Photographic Services Thanks Mark Rainbow Symphony, Inc. <http://www.rainbowsymphony.com> Ph# 818-708-8400 Fax# 818-708-8470 Quality Paper Eyewear and Specialty Optics



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Eclipse images on the web

From: F.Podmore To: SOLARECLIPSES@AULA.COM Date: Wed, 17 Jul 2002 12:01:47

With all the various SEML messages about where to find eclipse images on the web, is anyone collecting and collating them (e.g. by date) so that there is one main database page we can look at to view the wonderful results achieved??

Sorry if there is already such an archive, but I don't know its address.

Isn't this something that someone on the SEML could/should establish and maintain? Kind regards, Francis

SUNSPOTS

From: Rybrks1@cs.com To: SOLARECLIPSES@AULA.COM Date: Thu, 18 Jul 2002 15:33:33

Dear SEML; There are two very nice groups of sunspots visible. Predictions of some nice aurora from these now. Rather cloudy here in the USA midwest now.

In Africa last year I assumed the Sun would have few spots by the time Dec 2002 rolled around but maybe not. Ray Brooks

The Real Ecliptic?

From: Rybrks1@cs.com To: SOLARECLIPSES@AULA.COM Date: Thu, 18 Jul 2002 17:52:33

I noticed something major which never came to my attention in the past....and it relates to eclipses.

Although we all know that the other planets are to varying degrees "out of our plane", all of the other major planets from Mercury to Neptune are out of Earth's ecliptic plane in essentially the same axis of tilt; that is they all reach maximum ecliptic latitude on the March 21 side of the Sun. I never noticed this before. So Earth is really the oddball planet in terms of the ecliptic. Earth is likely the one that got smacked the hardest out of the real solar system plane. And that whack was probably the Mars-size rock that resulted in our Moon...thus magical eclipses.

I will probably hear about dozens of books now from you all on this subject of which I am unfortunately ignorant. (I have read some books about the Moon-origin theories..always feeling the billiard ball theory made sense over capture, an Earth lobe, etc.) Ray Brooks

Newspapers from '79 Washington eclipse

From: Donald Watrous To: SOLARECLIPSES@AULA.COM Date: Sun, 21 Jul 2002 17:47:38

I have copies of The Seattle Times and the Seattle Post-Intelligencer from Tuesday, February 27, 1979, with cover stories featuring the previous day's TSE visible from Goldendale. I'm willing to send them to anyone who'll cover packaging and postage. They're in pretty good shape for 30+ year old papers. (They've been out of the light.)

I went out there to see friends in Seattle and got them up early eclipse day for the trek south and then east towards Goldendale. By the time we got to the point to head east, the cloud cover was so dense and prospects so low that I let my friends prevail and we spent a leisurely day driving back up the coastal roads under the clouds. We experienced totality beneath the clouds observing birds making for the bushes to settle in for the "evening." Only later did I learn that Goldendale had a break in the clouds. I'm now thinning out boxes and don't need this reminder of my missing the miraculous parting of the clouds. Perhaps someone with better memories of the event would like to hold onto these? Or someone more interested in preserving this bit of history? Feel free to start a bidding war! :^) Don

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Eclipse of a star by Pluto

From: Jay.M.Pasachoff@williams.edu To: solareclipses@aula.com Date: Thu, 18 Jul 2002 11:46:45

Tomorrow night is to have a very rare event: a type of eclipse but of a star other than the sun. Such hidings are called occultations, and it is to be an occultation of a 12th magnitude star by Pluto. The predicted path is at <http://occult.mit.edu/research/occultations/Candidates/Predictions/P126.html>

and covers a band extending from Peru north to Costa Rica and Aruba. The path drawn so far is for a 50% dropoff in light, but we hope that the event would be visible out to or beyond the 90% dropoff in light, which makes it 175 km wider to each side. For various political and logistic reasons, we don't have any good stations in Peru or in Ecuador, which only recently turned out to be in the path. Unlike the case for solar eclipses, in which we can predict years in advance, the predictions for Pluto occultations change by 2000 or 3000 km in latitude days in advance.

I am part of a team of astronomers who have a couple of big telescopes (8 m Gemini South and two 6.5-m Magellan), as well as three 35-mm Celestrons outfitted with special CCDs that can read out at 1/2 second intervals. I am travelling with one of the portables. By the latest predictions, the big telescopes are not in the path. Jay Pasachoff

Here are some descriptions:

Below I have described the very rare astronomical event that is to take place on Friday night, July 19: the hiding of a star by the tiny planet Pluto. Pluto is so small and so far away at 4 billion miles from Earth that it almost never goes in front of a star. This is only the second one ever known. Studying the starlight as the star goes behind Pluto tells us about Pluto's atmosphere. We flew last Saturday to Chile, where the event was predicted to be available. But as the star and Pluto get closer and closer to each other in the sky, the predictions become more accurate. The latest predictions move the zone of visibility farther north, moving it away from Chile. We have therefore come to Aruba, where I have previous visited to observe the total solar eclipse of 1998 with great success and where we were for weeks in preparation. We need to set up and align our telescopes in preparation for the three minutes at about 9:50 pm on Friday night when we hope to observe the Pluto occultation.

Press Release for the U.S. National Science Foundation

Pluto Is the Target in Rare Event

Distant, elusive Pluto will have a rare moment of accessibility on Friday, July 19th. Though it is in the outer reaches of our solar system, so far away that it has never been seen clearly from Earth or even from the Hubble Space Telescope, Pluto's passage in front of a star gives astronomers a chance to study details of Pluto's atmosphere.

Prof. James L. Elliot of M.I.T. heads a team of a dozen astronomers that has gone to South America, where the event is predicted to be uniquely observable. The astronomers are to use two of the world's largest telescopes as well as three portable telescopes, all equipped with sensitive electronic detectors. The giant telescopes include the National Science Foundation's sponsored Gemini South, with a reflecting mirror 8 meters (26 feet) across, and the twin Magellan telescopes, each with a mirror 6.5 m (21 feet) across. Other senior astronomers participating in the expedition are Ted Dunham and Marc Buie of the Lowell Observatory, Flagstaff, Arizona, and Jay M. Pasachoff of Williams College, Williamstown, Massachusetts.

The unusual event is an occultation of a star by Pluto, a time when tiny Pluto hides a star's light from Earth. The star is so far away that its shadow, as it falls on Earth, is exactly the same size as Pluto itself--2350 km (1460 miles) across. It is predicted to be visible from a diagonal band across South America centered on Chile or Peru. But the measurements of where on Earth the occultation will be visible are subject to an uncertainty about the size of Pluto itself, so the event could wind up as far north as Central America or as far south as Antarctica. The prediction requires measurements, made at the Lowell Observatory and the U.S. Naval Observatory in Flagstaff, to a precision of about 20 times finer than the normal finest detail observable with telescopes on Earth. The Hubble Space Telescope has been used to improve the predictions, but it is not scheduled to be in the right place to observe the occultation itself. It was used in 1997, when similar

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teams observed an occultation of a star by Neptune's moon Triton.

If Pluto had no atmosphere, the star's light would wink out abruptly, subject only to some variations caused by known optical phenomena. But since Pluto has an atmosphere, the starlight will be bent and distorted by it and the light reaching Earth will vary over almost a minute before the star is entirely hidden for about 3 minutes. Only once before has such a phenomenon been observed, when Pluto went in front of a star in 1988. Most of what is known about Pluto's atmosphere comes from that occultation.

The event comes at a time when a committee, the Space Studies Board of the National Research Council, recommended a mission to Pluto as its top priority. Knowledge gained about Pluto's atmosphere from this week's occultation would be important for planning the mission.

In addition to Drs. Elliot, Dunham, Buie, and Pasachoff, expedition members include Michael Person and Kelly Clancy of MIT, Dr. Cathy Olkin and Brian Taylor of Lowell Observatory, Dr. Steven Souza and undergraduate student David Ticehurst of Williams College, and Oscar Saa of the Cerro Tololo Inter-American Observatory.

From: Patrick Poitevin

There are newsgroups and mailing lists on occultations. Please contact IOTA, David Dunham, etc. and post your messages on there media. PP

Eclipse twilight zone tales

From: KCStarguy@aol.com To: SOLARECLIPSES@AULA.COM Date: Fri, 26 Jul 2002 16:21:36

I mentioned previously how I met Robert Slobins through this listserve and how we came to find that we both saw the 1972 eclipse on the same knoll overlooking the Northumberland straits on that glorious day). A definite wow experience that I call Eclipse twilight zone tale. But another occurred in 1999.

I helped lead an eclipse to Hungary in 1999. Jeff the travel agent also had been on the Canberra in 1973. We did not know each other then. I was about to do my 10 Myths of Eclipses presentation for our group in Vienna. Jeff came up to me and showed me a picture from the Canberra before the eclipse.

I looked closely and the surroundings seemed familiar. There was that big silvered globe that someone was using to make a landscape shot of totality and which I shot into. I looked closer. I could see me in my light blue shirt and light pants. I was totally astounded.

Of the 2000 people on the ship setting up on the Canberra all over the ship, we were that close to each other!!!! And in 1999 we saw the eclipse together again. What goes around comes around. Are there some things in nature that are working other than the remarkable series of alignments that provide us with these beautiful solar eclipses? I call them Eclipse twilight zone tales Anyone have some?

From: Mike Simmons

I observed the 1999 eclipse from a hill above a small town in northwestern Iran. Most eclipse-related visitors were in or near Esfahan -- the country's second largest city and one of the most beautiful cities in the Middle East -- which was squarely in the eclipse path. Others were spread out along the path in various locations. Patrick and Joanne were in a nearby town that we stayed in later that night but we failed to link up as we'd hoped. There were lots of European visitors everywhere but we saw only one other very small group of Americans during our trip around the country. After returning and posting a report on my web site I became aware of another report by an American family also posted on the Web. Reading it I realized that we had been on the same hill above the same small town in northwestern Iran. He mentioned the same in his report after reading mine. But even with only one access road and not much space at the top of the hill we had failed to notice each other's group of Americans, two of very few American groups in the whole country. This one is weird to me not because we met there but because we happened to be so close and *didn't* meet. Mike Simmons

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Galileo's naked eye observations of the sun?

From : Paolo Amoroso <amoroso@MCLINK.IT> To : HASTRO-L@LISTSERV.WVU.EDU Date : Fri, 19 Jul 2002

On Fri, 19 Jul 2002 08:21:00 -0400, John Oliver wrote: The current naked eye sunspot lead some of my students to ask just how Galileo studied sunspots without damaging his eyes. Of course, I know that it is said that in fact he did sustain such damage but in fact I know that it is generally so painful to look at a very bright source that I wonder just how, in fact, he carried out his observations.

A friend of mine in Milano, Italy, is an experienced amateur astronomer with an extensive library of ancient books and documents. He researched this issue, and concluded that Galileo never directly looked at the Sun with the eye at the telescope's eyepiece. If I recall correctly, he said that Galileo used the eyepiece projection method.

My friend's conclusion is different from that of other researchers. He told me about his discussions with Patrick Moore. I seem to remember that Moore originally thought Galileo directly observed the Sun, but changed his mind after discussing the issue with my friend.

If there is interest, I can ask my friend to tell me more about this and his sources. Paolo

From : "John P. Oliver" <oliver@ASTRO.UFL.EDU>

Paolo Amoroso wrote: On Fri, 19 Jul 2002 08:21:00 -0400, John Oliver wrote: The current naked eye sunspot lead some of my students to ask just how Galileo studied sunspots without damaging his eyes. Of course, I know that it is said that in fact he did sustain such damage but in fact I know that it is generally so painful to look at a very bright source that I wonder just how, in fact, he carried out his observations.

A friend of mine in Milano, Italy, is an experienced amateur astronomer with an extensive library of ancient books and documents. He researched this issue, and concluded that Galileo never directly looked at the Sun with the eye at the telescope's eyepiece. If I recall correctly, he said that Galileo used the eyepiece projection method.

My friend's conclusion is different from that of other researchers. He told me about his discussions with Patrick Moore. I seem to remember that Moore originally thought Galileo directly observed the Sun, but changed his mind after discussing the issue with my friend.

If there is interest, I can ask my friend to tell me more about this and his sources. Paolo

EncyCMUClopedia * Extensive collection of CMU Common Lisp documentation <http://www.paoloamoroso.it/ency/README>

The projection method certainly makes sense. Lets see what other's say. John Oliver

From : Peter Abrahams <telscope@EUROPA.COM>

>that Galileo used the eyepiece projection method. If there is interest, I can ask my friend to tell me more about this and his sources.

I'd be very interested in these details & sources. Early telescopic solar observations are a topic deserving of more attention. In my files I find the following note, which I'm sure is from Hastro:

From: Barbara Becker <bjbecker@UCI.EDU> In his Second Letter to Mark Welser on Sunspots (August 12, 1612), Galileo describes his method of viewing the sun in this way: Direct the telescope upon the sun as if you were going to observe that body. Having focused and steadied it, expose a flat white shete of paper about a foot from the concave lens; upon this will fall a circular image of the sun's disk, with all the spots that are on it arranged and disposed with exactly the same symmetry as in the sun. The more the paper is moved away from the tube, the longer this image will become,

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and the better the spots will be depicted. Thus they will all be seen without damage to the eye, even the smallest of them - which, when observed through the telescope, can scarcely be perceived, and only with fatigue and injury to the eyes.

From : Les Cowley <ast1@sundog.clara.co.uk>

Yes, there is a popular misconception that the Galilean telescope cannot project an image of the sun. It can do so quite effectively. Les Cowley

From : Barbara Becker <bjbecker@UCI.EDU>

This quote can be found on p. 115 of Stillman Drake's *Discoveries and Opinions of Galileo*, which is widely available. best, Barb.

From : Lester Ness <lesterness@HOTMAIL.COM>

Could smoke from a fire serve? Lester Ness

From : Axel Harvey <axe@CAM.ORG>

On Sat, 20 Jul 2002, Lester Ness wrote: Could smoke from a fire serve?

Montreal was recently covered, for an entire day, with an eery pall of smoke from forest fires in the James Bay area. There was a sharply defined solar disk, but it was yellower and brighter than what one sees through high fog or a thin cloud layer, and harder to look at. I certainly wouldn't want to see it magnified - even though the overall quantity of light was much diminished so that the city seemed to be under a day-long central eclipse. It was very strange.

But I suppose you want to know if a smudge fire could be built to make a reliable filter. My guess is that it would be too difficult to control; I have never tried, however.

From : Lester Ness <lesterness@HOTMAIL.COM>

Actually, I have boyhood memories of watching the sun through smoke from a neighbor's burning corn stubble. I didn't see any sunspots, but I wonder if it might be possible with thicker smoke.

How did ancient Chinese astronomers observe sunspots? They are recorded. Lester

From : Brian Whatcott <betwys@DIRECTVINTERNET.COM>

At 08:20 AM 7/19/02, Axel Harvey <axe@CAM.ORG>, you wrote:

..."I wonder just how, in fact, he carried out his observations."

I cannot answer for Galileo, but there is sometimes a hazy cloud (or high fog) cover which is just right to allow the Sun's disk to appear sharp while its light is reduced to a pleasant silver glow. When I was a boy I often looked at sunspots with binoculars under such conditions. I am now 62 and still without glasses.

I can confirm Axel's observation in a similar time frame. In my case, an early sunset evening with an orange sky allowed quite comfortable viewing of the orange Sun, with several prominent sunspots visible. Brian Whatcott

From : "Robert B. Ariail" <Skyhawk-@MINDSPRING.COM>

Actually it was a Benedictine abbot named Benedetto Castelli who devised the method by which Galileo made his most successful telescopic observations of the sun and recorded his sunspot data. Castelli had been acquainted with Galileo at least as early as 1602 and studied in Padua with him as a pupil from 1604-6. He is noted for providing a written descrip-

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tion of the thermoscope invented by Galileo in 1606.

Along with a letter Castelli wrote to Galileo on May 8, 1612, were diagrams of sunspot observations recorded by: "first drawing a perfect circle on paper and then fitting the sun's telescopic image exactly to it, insuring exact placement of spots traced on the paper." This [projection] method was described and duly credited to Castelli in Galileo's second (of three) sunspot letter. Galileo asked Castelli to make daily observations of sunspots as carefully as possible. Castelli recorded those so accurately that the daily movement of a spot could be measured, enabling Galileo to prove that spots must be on the sun's surface and that the sun rotated about once a month. He had gone further - possibly at Galileo's suggestion - and divided the sun's hemisphere into fifteen equal parts and found that the daily progress of a spot followed the versine [versed sine] relationship. This allowed Galileo to demonstrate mathematically that the spots were on the very surface of the sun, or very little distant from it, as he was to do in his second sunspot letter to Welser.

Although the projection methods of solar observation as detailed by Galileo and Castelli certainly were significant and productive, the question remains as to the method(s) first used by Galileo to make his earliest solar observations. The first letter to Galileo on this subject had arrived from Rome in September 1611. His reply indicated that he had by then reached a conclusion concerning the sun's rotation on its axis. There is also much evidence that Galileo exhibited sunspots to others during his visit to Rome in April 1611. It is probable that Galileo first interested himself in sunspots shortly before this trip to Rome. In letters he wrote in 1612, the earliest he implied such an interest was January 1611.

Could these earliest solar observations by Galileo have been conducted visually through significant haze or the thick atmosphere available in the late afternoon skies? Or did he develop an earlier projection technique to make these observations?

Galileo first noticed trouble with his eyes in 1636. Although he received treatment, it was unsuccessful and by June of 1637 he had lost the sight of his left eye. By December of that year he was totally blind. The true nature of his medical condition seems uncertain but appears to have been a virulent infection. There also seems to have been some evidence of damage to his eyes by the sun. Is there any sound evidence that Galileo's earliest solar observations may have caused damage that contributed to his blindness five years prior to his death? Such could help establish his earliest techniques of observing the sun with the first astronomical telescope.

Re: The above information and considerably more may be found in Stillman Drake's scholarly work: *Galileo At Work His Scientific Biography* (1978). See also: Stillman Drake - *Galileo* (1980), and Colin A. Ronan - *Galileo* (1974) Bob Ariail

From : Joan Griffith <despinn@HOTMAIL.COM>

I don't know about haze from smog or smoke from fire, but I recall that in the 1950s it was recommended that people who wanted to look at an eclipse apply smoke to a plain glass and look at the sun through that. I have never seen sunspots, so I will have to take a look at the sun one day. There is plenty of haze here in Washington DC, between the smog, Canadian smoke, and politicians' hot air. Joan

Things turn out best for the people who make the best of the way things turn out. Art Linkletter

From : "Bradley E. SCHAEFER" <schaefer@ASTRO.AS.UTEXAS.EDU>

Hi; I have often heard the old myth that Galileo was blinded by his looking at the Sun. This mistake grew out of people putting together two facts (that Galileo used a telescope to look at the Sun and that he grew blind) and connecting them incorrectly. The problem is that Galileo used his telescope in the projection mode, which causes no harm to his eyes (as previous posts have shown). There is no evidence that Galileo looked directly at the Sun with his telescope, and we know that this is unlikely for any significant length of time since the brightness hurts so badly. (Permanent damage takes >11 seconds of steady staring [Sadun, Sadun, & Sadun 1984, Arch. Ophthalmol, v102, p1510].) Another myth-killer is that Galileo did his solar observing around the 1612 with a loss of interest in later years (and any later observations would be by projection as we are told), while Galileo grew blind at the age of 72 (around 25 years later). The trouble is that solar retinopathy always accurs within a day or so, and this completely breaks any possible connection between Gali-

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leo's viewing of the Sun and his decades-later blindness. For further details; see Andy Young's web site at <http://mintaka.sdsu.edu/GF/vision/Galileo.html>. Andy also has the definitive pages on eye damage from the Sun as well as on the Green Flash. So give this myth a rest. Cheers, Brad schaefer@astro.as.utexas.edu

From : Lenny Abbey
<labbey@MINDSPRING.COM>

A scotoma, or burned spot on the retina, can occur almost instantly. Lenny

From : Paolo Amoroso
<amoroso@MCLINK.IT>

Given the extensive information provided in this thread, I think it's no longer necessary. Paolo

Monday, August 5, 2002 19

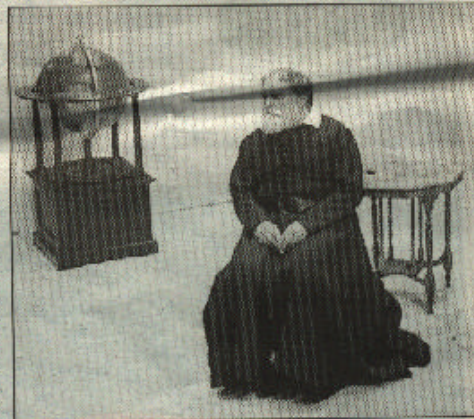
The Life Of Galileo

★★★★☆

In the life of Galileo Galilei (1564-1642), Brecht, writing in part in the wake of Hiroshima and Nagasaki, found a compelling parable of reason's bruising relationship with power.

Galileo (Ted Van Griethuysen) is a witty, ironical operator, passing off a Dutch invention (the telescope) as his own to win money from the Venetian Senate and sucking up to powerful noble patrons to protect his discoveries from the disapproval of the church. But his astronomical theories make collision with the Inquisition inevitable. When that confrontation comes, it's not clear that Galileo has the moral strength to resist.

David Salter, one of the finalists in the BAC's James Menzies-Kitchin award for young directors, has produced a decent, rather straight



production of this rich, sometimes overly didactic play. Julie Marabelle's fine white box set, which combines the surface of the moon with an analytical grid pattern, allows Salter to resolve the action into some nicely posed stage images.

Van Griethuysen captures something of the grizzled arrogance of Brecht's Galileo and there are strong turns from Sean Baker as the lizard-like Cardinal Inquisitor and Nigel Anthony as the weary Pope Urban VIII. But all the large cast occasionally slip into ham or heartiness and the whole thing has a bluff, retro feel. Most of all, Salter never shows why he has chosen to stage Galileo's story now.

Stephen Brown

Until Aug 25, BAC, 176 Lavender Hill SW11, Tue to Sat 7.30pm, Sun 5.30 pm, £12.75, £6.50 concs. Tel: 020 7223 2223.
Rail: Clapham Junction

Newspaper August 5, 2002

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World Maps of Solar Eclipse Paths: 20th & 21st Century

From : FRED ESPENAK <u32fe@lepvax.gsfc.nasa.gov> To : SOLARECLIPSES@AULA.COM, eclipse@hydra.carleton.ca Date : Tue, 16 Jul 2002 14:16:44 -0400

This summer as in past years, I am fortunate to be mentoring a bright young student for six weeks. Holly Schurter is working with me on a project I have been thinking about for half a dozen years but just haven't had time to pursue. She is assisting me in the preparation of a world atlas of eclipse maps.

Many of you have already seen the first product of our summer collaboration which is a series of four world maps covering the period 2001-2025.

We have now published the next set of maps which are on-line at the new "World Atlas of Solar Eclipse Paths" web page:

<http://sunearth.gsfc.nasa.gov/eclipse/SEatlas/SEatlas.html>

The atlas currently contains ten world maps covering the 20th and 21st centuries. Each map covers a 20 year period and includes the paths of all total, annular and hybrid solar eclipses. We plan to add several more centuries to the atlas before Holly finishes up her summer internship in August.

The maps are all 16 color GIF files which offer the advantage of small file size for fast transmission while producing maps at relatively high resolution. Each map is approximately 130 k and measures 1465 x 1942 pixels.

Please take a look and contact me with any comments or corrections. Fred Espenak

From : Daniel Fischer <dfischer@astro.uni-bonn.de>

Dear Fred (and all others), this World Atlas is a wonderful resource - but there is yet one more map collection that would be great to have: with detailed maps of all *islands*, however small they be, that are hit by totality zones.

For example, someone has told me that the eclipse of 2010 will not only hit the Easter Island (where the weather prospects are poor) but also some minor islands in the mid-Pacific - which are not mentioned in the only long-range planning book I'm aware of, Harrington's "Eclipse!"

By the way, does today's date ring any bells around here? It was 20 years ago, on July 20, 1982, that I went on my very first eclipse 'expedition', going up a hill near here to escape the haze of Bonn for watching a sunset partial eclipse. I could be seen indeed (but also, it turns out, from the middle of Bonn, with the help of an old b/w video tube camera that apparently caught a lot of NIR light# despite the poor conditions). Daniel

From: Rybrks1@cs.com

Many thanks to Fred and his assistant, Holly, for such wonderful maps. I finally got a chance to view them today. They are a balance of beauty and data. Thanks to you again for your continued contributions to eclipses.

The maps prompted a question...do any adjacent two eclipses within a saros ever overlap? Look at Jun 21 2001 and the next eclipse Jul 2 2019 in Saros 127. The morning of 2001 is almost overlapped by the afternoon of 2019. Ray Brooks

From: Onderbeke Julien

Also many thanks to Mr. Espenak and Mrs. Shurter for the beautiful eclipse maps. I just asked myself if there was a hybrid eclipse in the upper left corner of the 2021-2040 map (little pink line), but I guess it must be an intersection line of the path of the total eclipse of 2033 and the annular eclipse of 2021. The authors promise they will still add several centuries. We can hope on it and are very grateful for the work.